THE INFANTRY SCHOOL QUARTERLY

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INFANTRY SCHOOL QUARTERLY

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Page

The Atomic Weapon and the Infantryman 5
Lt G. W. Hartnell, Infantry

Of Hills and Hell Raisers 13
Capt Curtis L. Anders

Small Arms Fire Course 23
Capt Charles A. Nicholson, Infantry

Play the Gimmicks 28
Lt Col Edward M. Flanagan, Artillery

Battle Sight Zero 32
Capt George D. Crosby, Infantry and
Capt Alfred J. Crupi, Infantry

A Question for Commanders 37
Capt Frank P. Jones, Infantry

The More We Get Together 41
Maj Charles B. Hazelrigg, Infantry

The Wiremobile 47
Capt Joseph D. Smith, Jr., Infantry

Wooden Working Model — The Pistol 51
Maj Frederick H. Black, Jr., Infantry and
WOJG Coats Brown

Defense of Rear Areas, Part II 55
Lt Col Harold B. Mangold, Infantry

Combat Tips 68
Report on Korea
Col William J. McCaffrey, Infantry

Specialize or Standardize 74
A Plea for Mountain Troops
Lt James R. Herrington, Infantry
The Case for Standardization
Maj Raymond H. Hitchcock, Infantry

The Stadia Sight 83
Maj Lee W. Fritter, Infantry

The Range Deflection Scale 87
Lt Orville C. Folkerts, Infantry

Pursuit! 94
Maj John R. Flynn, Infantry

Short Cut to Theory of Lashing 99
Maj Richard McClure, Infantry

Courses of Action 102
Capt Conrad B. Pitcher, Infantry

Letters 108

Meet the Authors 110

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THE ATOMIC WEAPON AND THE INFANTRYMAN

By LT G. W. HARTNELL, Infantry

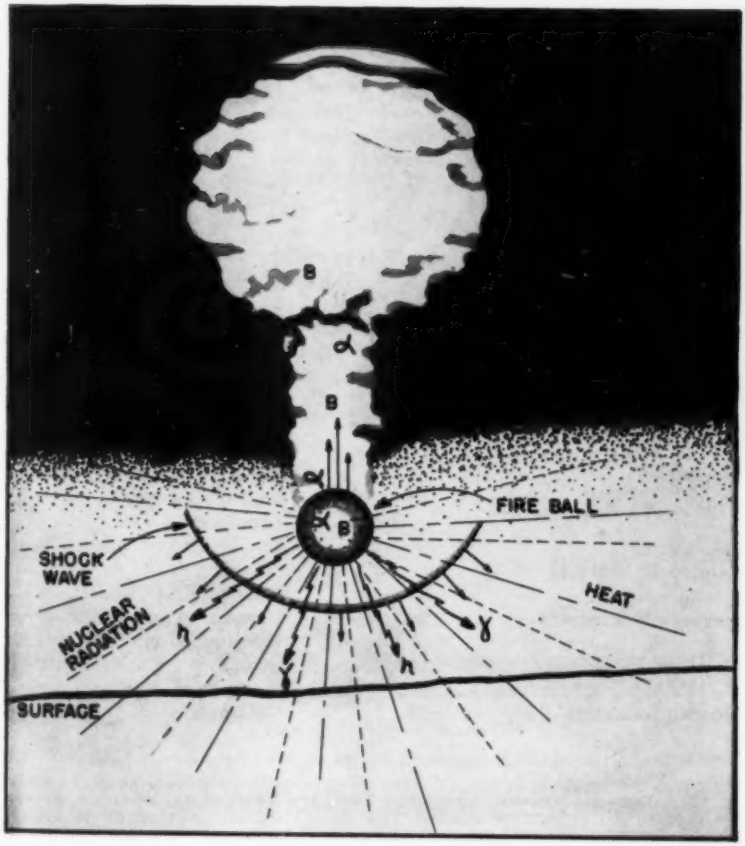


Figure 1. Air Burst

Science has recently made available to the military forces a new supporting weapon to be added to the already large family of weapons providing support to the Infantryman in combat. As new tactics and techniques are developed by the higher command echelons of the Army to fully utilize its newest and most powerful weapon, the Doughboy himself must begin to think of and perfect his own techniques to obtain the greatest benefit from the atomic weapon and at the same time provide himself with the maximum protection in case a potential enemy uses similar weapons against him.

To introduce this individual need to the Infantryman, the QUARTERLY presents "The Atomic Weapon and the Infantryman" which provides a basis for the thinking of all personnel who may be affected by an all-out atomic war. With minor adaptations, this article may be used in presenting instruction to units.

In an atomic explosion a tremendous amount of energy is released in a short period of time: 90 percent of the energy is released in the first second. This permits only slight opportunity of preventing damage to personnel and materiel.

The effects of an atomic weapon* are similar to those of a conventional weapon in that heat and blast are produced. Additionally, atomic explosions produce nuclear radiation and psychological effects that must be considered. The direct effects of blast on the human body may be disregarded because an overpressure** greater than 150 pounds per square inch (psi) is necessary to cause serious internal injury or death. Considerably less overpressures will cause severe damage*** to the following materiel:

Materiel	Overpressure (psi)	Result
Tanks	40	Tanks overturned, hatches and tracks blown off, gun damaged.
Small Arms	36	Stocks broken, barrels bent.
Reinforced concrete structures	35	Collapse.
Artillery field pieces	28	Damage to gun and cradle.
Light vehicles	15	Overturned and destroyed.
Electronic equipment	12	Sets thrown about, general destruction.
Wooden buildings	5	Collapse.

*This discussion concerns the *nominal bomb*, one whose energy release is equivalent to 20,000 tons of TNT (20 kilotons). This was the approximate yield of the weapon used over Hiroshima and Nagasaki. Atomic weapons many times more powerful should be considered as possibilities.

**Overpressure — that pressure above atmospheric pressure.

***Severe damage — damage requiring the equipment to be replaced or sent to the rear to be repaired.

The majority of the casualties produced by blast result from secondary effects. These secondary effects are produced by flying debris, branches, glass, rocks, equipment, rubble, and fires caused by broken gas lines, shorted power lines, and exposed flames.

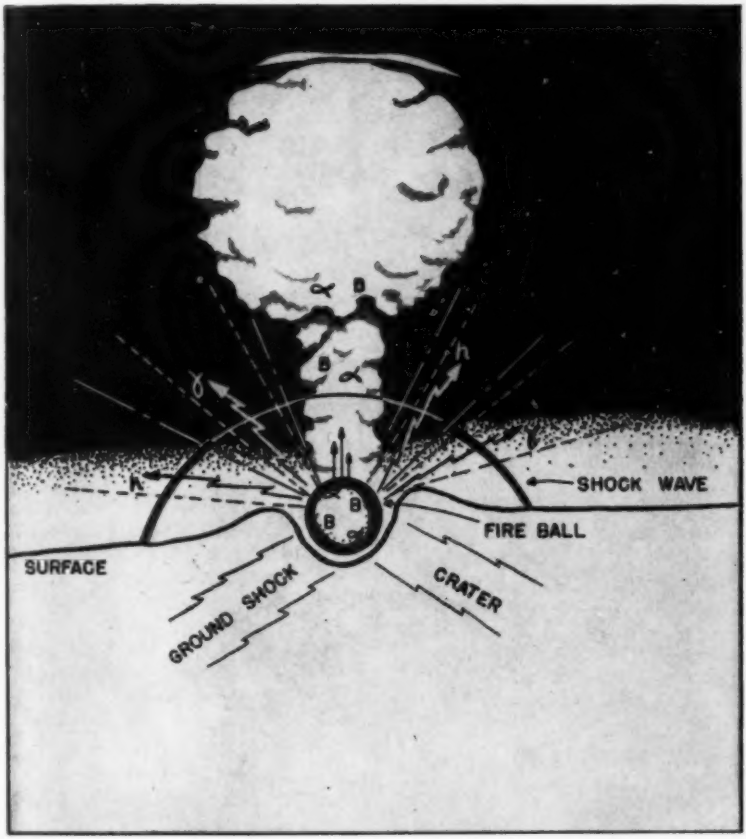


Figure 2. Surface Burst

In an atomic explosion, there is an instantaneous flash of visible light, and infrared and ultraviolet rays are emitted. These rays produce a large number of casualties from flash burns. Other burns result from the secondary fires. An instantaneous dosage of ten calories per square centimeter will cause third degree burns on exposed

parts of the body. This dosage will extend approximately 2100 yards from ground zero*. An additional effect of thermal radiation is temporary blindness. This effect is caused by the instantaneous flash of visible light which has an intensity of 800 to 1,000 times that of the sun. A normal light bulb turned on in a dark room will have a similar effect on vision. The approximate effects on vision are as follows:

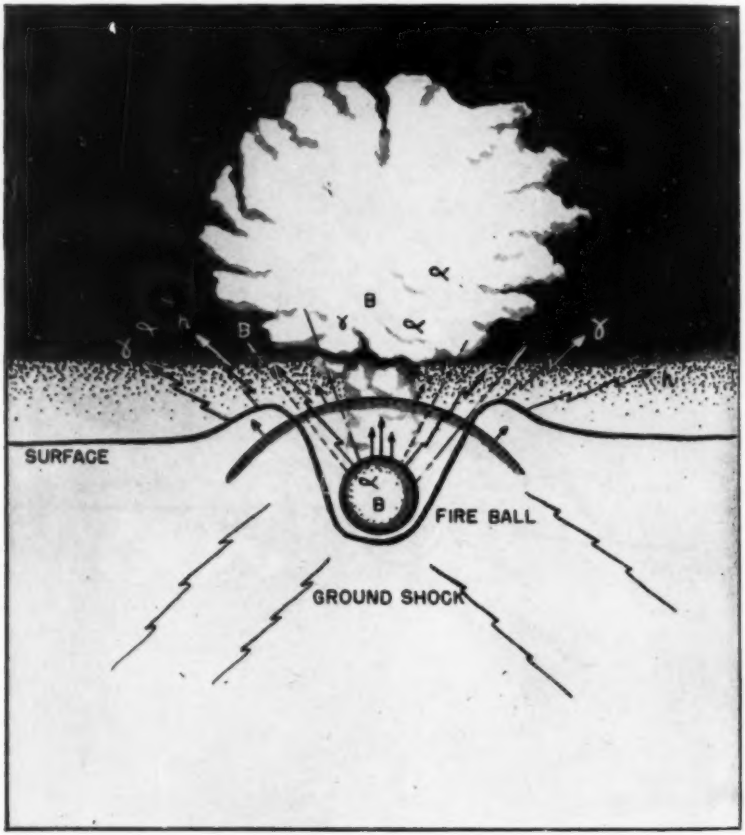


Figure 3. Sub-surface Burst

*Ground zero — that point on the surface directly above or below the burst.

If the fireball is	In the field of vision	Not in the field of vision
In the day	Loss of vision from five to ten minutes	No effect on vision
During the night	Loss of vision for one hour or more	Loss of vision for 30 or more minutes

A portion of the energy released in an atomic explosion is in the form of alpha and beta particles, neutrons, and gamma rays. Alpha and beta particles penetrating the body destroy cells and sickness and death may result. The same is true of neutrons and gamma rays.

Nuclear radiation is considered in two forms, initial and residual. Initial radiation is that radiation delivered in the first few seconds after the weapon explodes. It lasts for a period of 90 seconds. Residual radiation is caused by the radioactive material which remains for some time in the vicinity of the explosion. Radiation is measured in roentgens. The exact dosage necessary to affect personnel is unknown, but the data below gives the approximate effects of various dosages:

At a distance of 1,260 yards from ground zero on the surface, the dosage received is 400 roentgen.

The shock and fear following an atomic explosion, induced by the tremendous blast, the blinding flash, heat, the atomic cloud, and the fear of the unknown, have a great psychological effect on personnel. Units must be trained and indoctrinated so that they do not panic at the sight of an explosion or as a result of its effects. The individual should be able to recognize the types of atomic explosions and know the proper protective measures against each.

An atomic weapon may be detonated as an air, surface, or subsurface burst. An air burst (see Figure 1) is characterized by a blinding flash of visible light which becomes an expanding ball of fire. This fire

Acute Whole Body Dosage in Roentgen	Result
150 r	Vomiting and nausea for about one day in approximately 25 per cent of the personnel.
400 r	Vomiting and nausea in all personnel. 50 percent deaths may be anticipated.
600 r	Vomiting and nausea in all personnel. Up to 100 percent deaths may be anticipated.

ball expands to a diameter of approximately 300 yards. A rapidly-expanding shock wave is formed by the explosion. In the case where the relative humidity is greater than 60 per cent, a cloud may be formed by the explosion. This cloud will be present for a short period. The smoke from the fire ball and the dust drawn up as the fire ball ascends, form the mushroom shaped cloud which rises to the upper atmosphere. Maximum effects from thermal radiation are obtained from this type of burst. Initial nuclear radiation only lasts about 90 seconds. Residual nuclear radiation is negligible. The air burst would normally be used against personnel, equipment, cities, or installations above ground.

The characteristics of the surface burst (see Figure 2) are similar to those of an air burst. The fire ball is hemispherical in shape. In addition to the normal characteristics, a dust cloud, known as the base surge, may be formed. The pressure close to ground zero will be extremely high, resulting in over-destruction* of the area close to the burst. However, the pressure will fall off rapidly as a result of energy loss to the earth, and the area of damage will be less than that for an air burst. The burst being so close to the ground will set up a ground shock which will cause additional damage to structures and foundations in the area. The thermal effect from this burst is reduced to one-third that of an air burst, as the ground absorbs a great deal of this energy. Initial nuclear radiation will remain the same for this burst. Residual radiation will be considerable as the fall out from the cloud, the base surge, and the direct contamination of the crater will persist as a hazard in the immediate area. A large crater will result. This type of burst could be used against air fields to destroy runways, against harbors, or to deny an area to the enemy for a short period of time.

The subsurface burst (see Figure 3) may be underground or underwater. In either case the characteristics are similar. The ball of fire will be present but will not be seen until the surface ruptures and even then it might be obscured by the dust cloud or mist. Under the conditions of the Bikini Baker Day Test, a hollow column of water was thrown into the air to a height of about 8000 feet with a diameter of 400 yards. The resulting column of water will vary with the depth of the burst. Both air and ground shock will be formed by the blast. The ground or water surrounding the burst will absorb most of the thermal radiation and initial nuclear radiation. Residual radiation will contaminate a large area as a result of throw-out and direct contamination. A crater will be formed in the case of the underground burst, which will be larger than that for the surface burst. From evaluation of previous tests it is estimated that the crater will be approximately 260 yards across and 100 feet deep. Such bursts can be used to destroy underground factories, buildings, or airfields. In shallow water the column of water might not be formed. An additional

*Over-destruction — The result of concentrated heat and blast which destroys an area or installation *beyond* the necessary military requirement for destruction.

characteristic of the underwater burst is the formation of large waves close to the burst. This burst could be used to destroy underground sub pens and harbors.

Weather conditions influence the blast and thermal effect of an atomic explosion, but have little or no effect on nuclear radiation. Heavy rains, smoke, or fog may reduce the effectiveness of air shock by as much as 50 percent. Clouds will increase or decrease this effect depending upon their location with respect to the burst. If they are below the burst, they will reflect a portion of the blast upward, and if they are above the burst, they will reflect a portion of the blast downward thereby increasing the blast effect. In hilly areas on the side toward the burst the damage will be greater; there may be little or no damage on the reverse slope. The thermal effect will be greatest on a clear day. Heavy fog, smoke or rain will reduce thermal radiation considerably. Clouds will impart the same effect on thermal radiation as they did on blast.

The gamma radiation is independent of atmospheric conditions and remains constant for all conditions of weather. However, wind direction and velocity influence the drift of radioactive particles. Land masses will absorb or reflect gamma radiation and thereby increase or decrease this effect.

PROTECTIVE MEASURES

The measures to be taken for protection against the effects of an atomic weapon are very similar to those for conventional weapons. Casualties due to blast are caused chiefly by flying debris. These casualties are reduced if you and your men immediately take cover in ditches, culverts, or depressions in the ground. A deep foxhole will provide adequate protection from blast effects (see Figure 4). In built-up areas, stay away from lightly constructed buildings, as these may collapse and cause further damage. All buildings and obstacles between you and the burst will afford protection from heat (see Figure 5). If you are in the open, fall to the ground and cover *all exposed portions* of your skin such as the face, hands, and neck. If you are exposed at the time of the explosion, *you have less than three seconds to seek cover before being burned.* Wooded areas shield you from the heat, but at the same time are a hazard as they may be set on fire and cause secondary burns. Men in tanks usually are not affected by the heat.

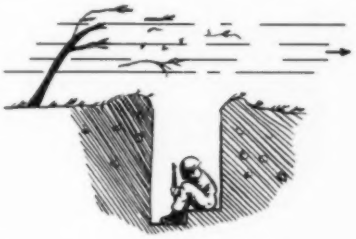


Figure 4. A good deep foxhile affords protection against blast.

To prevent temporary blindness from an atomic explosion, cover your eyes and turn away from the burst.*

*When the use of an atomic weapon is planned by friendly forces, advance information should be sent to all personnel in and nearby the area giving as much information about the location and the time of the explosion as security will allow.

For protection from nuclear radiation, if you are within the area

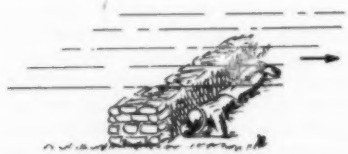


Figure 5. An obstacle, such as a stone wall, affords protection against the effects of thermal radiation.

of the dust cloud formed by an atomic burst, cover your mouth and nose so that radioactive particles will not be taken internally. All-around shielding is necessary to protect against nuclear radiation, as gamma rays will reflect in all directions. Figure 6 shows the behavior of these rays upon striking the ground or other obstacles. Several inches of dirt covering a foxhole will reduce this effect. The following table shows the percentage of gamma radiation which will penetrate various types and thicknesses of material:

fantrymen should understand the effects of the weapon. Proper training, indoctrination, and leadership

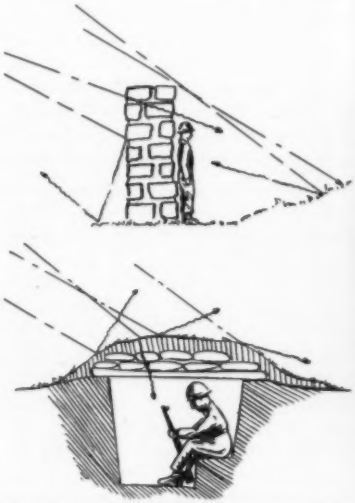


Figure 6. Gamma rays may penetrate or be deflected into an otherwise good position (top). All around shielding is desirable for maximum protection (bottom).

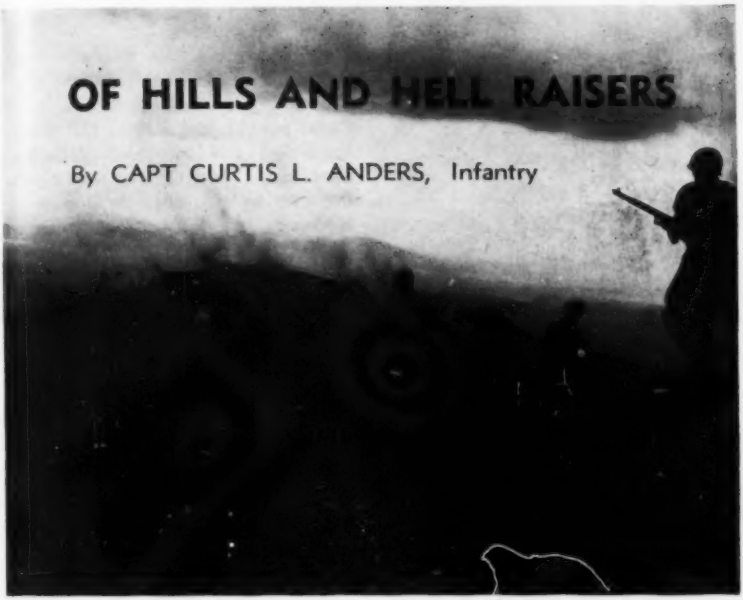
MATERIAL			Per cent Penetration
Dirt	Concrete	Steel	
Thickness (Inches)			
7.5	4.5	1.5	50%
17.5	10.5	3.5	20%
25	15	5	10%
50	30	10	1%

Final reports from the Hiroshima and Nagasaki explosions indicate that no impotency was caused by nuclear radiation, although, in some cases *temporary* sterility resulted. Fear of impotency and sterility must be eliminated.

To overcome the psychological effect of an atomic explosion, Infantrymen should understand the effects of the weapon. Proper training, indoctrination, and leadership will achieve the desired results. Even though the atomic weapon is the most destructive weapon known to man at this time, it is not to be considered as the absolute weapon. Infantrymen well versed in the defensive measures to be taken before, during, and after an atomic explosion *can* survive.

OF HILLS AND HELL RAISERS

By CAPT CURTIS L. ANDERS, Infantry



EDITOR'S NOTE: *It is a curious fact that almost everyone who writes about the Korean Experience has an impression that differs somewhat from the impressions of others. For this reason, it is difficult, if not impossible, for any writer to present an article and say, "this it IT." What we can do is consider each article for what it is — one man's opinion — and take it for whatever good it may do, either as information or contrast.*

"Of Hills and Hell Raisers" is an example of one company-grade officer's impressions. Although it is written in a positive manner, it should not be interpreted as reflecting the thought of The Infantry School or the INFANTRY SCHOOL QUARTERLY.

One fine day Fate says: "YOU'RE going to the FEC." "But the FEC is too far east for me!" you protest.

Maybe so, but rotation works both ways and life is full of sorrows. To paraphrase an old and well-known saying, "If Korea is inevitable, you might as well relax."

As soon as the initial panic wears off, a million questions will pop into your head. Even if you've been overseas before there may be things about this war that will puzzle you. In either case, you may have some questions.

So let us now don kimono, assume the position of meditation, and take up some of the problems of those about to head west to reach the East.

Q: *How soon will I get back?*

A: This is asked more often than any other question, and with good reason. Going to war is bad enough anytime, but since this is not a total war a man does not necessarily

expect to be gone for the duration. The rotation plan leads him to expect to be home in some number of months depending upon a number of factors other than victory.

Remember: rotation systems can and do undergo violent changes; A year is as good a planning figure as any.

It goes without saying that an early settlement — preferably victory — would result in the most desirable rotation.

Q: *What clothing and equipment will I need?*

A: Assuming that Korea is your destination, your needs will be few. The shipping uniform at the West Coast ports is the winter OD shade 33 jacket and trousers. Fatigues, boots, and other items of field clothing can be acquired in Japan or Korea.

Changes of socks and underwear and toilet articles are all that you will need for the trip over, especially if you fly.

Since you won't know what your assignment will be, while you are

travelling through the well-stocked rear areas it will be natural for you to acquire a wagon-load of equipment "just in case." This should be avoided, for the supply of necessary items in almost every unit is excellent. The efficiency of the clothing exchange system at the unit shower points makes stockpiling of fatigues, socks, and underwear unnecessary.

The best rule is, travel light.

As for equipment, here—again—everything is furnished.

In the event you are assigned to a unit in Japan, you can send home for the uniforms and equipment you need.

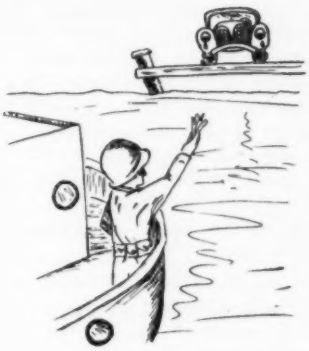
Q: *What about writing materials?*

A: Take enough with you when you leave the States to last you while you are in the pipeline. After you join a unit the mobile PX's and the Red Cross will fill your needs. Ink is available but good fountain pens are scarce forward of division headquarters: take along a good pen and hang on to it. Letters are

sent air-mail from Korea to the States free, but a supply of air-mail stamps for use while in the pipeline will come in handy. Packages can be mailed by your unit mail clerk at the regimental or division Army Post Office.

Q: *How much money will I need along the way?*

A: Only enough to cover your meals and incidental expenses. No major expenditures will be required of you. Checks can be cashed if push comes to shove.



Q: *Will I need much money in Korea?*

A: No. A deduction for field rations is made by finance. You will need money for Rest and Rehabilitation Leave in Japan, but not for several months. Replacement of toilet articles and stationery, haircuts, and miscellaneous expenses can be covered by around $10 a month, depending on your interpretation of the word miscellaneous. Allot the rest.

Q: *Should I take my car with me to the Port of Embarkation in the hope of selling it there?*

A: Generally speaking, a POE is no place for settling private affairs. Your time is too limited for intelligent handling of anything but the processing that is required of you. Taking a car is a calculated risk, at best. Air travel rates compare favorably with ground costs and give you more time at home.

Q: *What about taking cameras to Korea?*

A: A fine idea — but hang on to anything valuable you may take. Movie cameras and 35-mm types are especially popular but all film is in short supply, especially in the forward areas. Color film is practically non-existent, even in Japan. Arrange for a supply of film from the States before you leave.

Although it is possible to get cameras in Japan, there is a risk of either having to wait for the type of camera you want or having to accept a substitute. Buy the camera you want before you leave and hang on to it.

By the way, certain subjects are covered by security regulations. Be sure you are not violating security before you shoot, for quite apart from the potential danger of military information falling into enemy hands, you risk confiscation of your films or camera.

Q: *What address should I give my family while I am in the pipeline?*

A: None. To give any of the replacement unit APO numbers will result in confusion and delay, not mail. Let your first act after joining your permanent unit be air-mailing your correct address home. Your first letters from home should reach you in from fourteen to twenty days.

Q: *What job can I expect to get?*

A: Every Infantryman should expect to get a troop command as a matter of course. Our specialty is leading men in battle. We are members of the first string, not bench warmers, not spectators.

Still, it may be that all of the command positions in your new unit will be full. In this case you may be assigned as executive officer or understudy until a vacancy occurs. In most units, newly arrived officers and NCO's are assigned to companies and battalions and rotated to staff and administrative positions in the rear after several months. This is a very wise policy, as you will agree after six or eight months as a rifle platoon leader (if this chances to be your lot).

In Korea, as anywhere, you go where you are sent and do as you are told.

Q: *What type of fighting should I expect?*

A: Mountain fighting. Such is the nature of the terrain all over Korea that most of our fights take place in the boondocks — hundreds of meters above level ground, thousands of meters away from the roads. A good basic understanding of mountain operations *in addition* to those operations covered in FM's 7-10 and 7-20 is essential.

Q: *What is so different about mountain operations?*

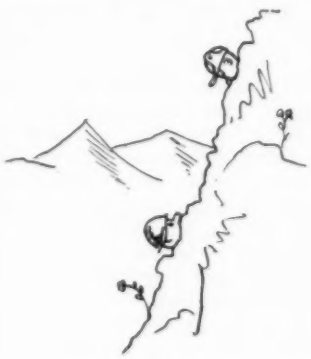
A: The supply problems, the communication problems, the evacuation problems. . . .

Q: *Wait a minute! Those problems are present in any kind of operation. I don't see the difference.*

A: Probably not. In a mountain operation, each of your problems is magnified by the size, the remoteness, the just-plain cussedness of the particular mountain you're trying to get or hold.

Q: *Well, take supply.*

A: In a rifle company you'll always be on a ridgeline. You may be as high as 1,000 meters. In all probability, the only trail over which your supplies can come is a narrow path starting two or three miles back in the rear. Darkness, weather, and the tendency of the native cargo carriers to take frequent and prolonged rests all tend to delay the arrival of food, ammunition, medical supplies, litters, water, or anything you might need. The employment of some weapons is based upon the possibility — or impossibility — of rapid ammunition resupply.



Q: *In a rifle company, whose job is it to see that the troops get these supplies?*

A: The usual channel of supply applies. The executive officer rarely sees the supply sergeant, however, since the exec is on the hill and the supply sergeant is with the battalion trains. These two keep in contact by telephone and by the frequent trips to the line made by the supply sergeant to keep informed of the company's needs and to supervise the native porters.

When hot meals are being sent to the line, the mess sergeant and mess personnel supervise the human pack train and serve the meals in close proximity to, if not right along, the ridgeline.

Q: *How does the unit administrator fit into the supply system in Korea?*

A: If your outfit has one, which is highly unlikely, he will supervise all the activity in the company's kitchen and supply tents. He and the executive officer will work out all the problems that otherwise must be broken down three ways and referred to either the first sergeant, the mess sergeant, or the supply sergeant. Incidentally, they are still called by those names in Korea.

Q: *What about paper work?*

A: Property books and individual property records are kept in most units. The Army-wide emphasis on supply economy certainly extends to Korea, right up to line units. The "Korea Certificate of Battle Loss" is approved only when the loss is in keeping with the spirit as well as the letter of the regulations. The day of a man being evacuated with three pistols, nine watches, and fourteen compasses is gone. The statement of charges method of enforcing supply economy is used when necessary in line units. Of course, it is far better to have your unit so well impressed with the necessity for supply economy that use of such measures is not necessary.

One factor in supply economy that is generally overlooked in the flutter of statement-of-charges forms is the commander's role: the commander who keeps his men light, who never loads them down with equipment they really don't need, will rarely have to lower the boom.

Common practice is for the men to be given the opportunity to turn in anything they do not feel they will need or wish to carry *before* going into the boondocks. This liberality in checking luxury items should not be extended to cover transoceanic radios, captured ponies or orphans.

Q: *What about the other administrative functions?*

A: These come under the first sergeant's wing since the executive officer spends so much time in the boondocks. Most CO's have a telephone conference with the "Top" right after supper to talk over the day's events in the paper field. The unit mail clerk usually brings up papers for the CO's signature.

This practice of leaving the first sergeant in the rear varies considerably in rifle companies. When, for some good reason, the "Top" does stay behind, the communication sergeant usually acts as "field first" on the hill. This is a good way of training replacements for first sergeants.

Q: *What about communications in combat units?*

A: Wire communication, generally is excellent. It is theoretically possible for a rifle company commander in Korea to talk to the Chief of Staff in the Pentagon (but don't try it). For maximum efficiency, however, a rifle company needs a vastly expanded net.

Each platoon should have an EE-8 to replace the sound power telephone for communication with the company command post, the observation post, and adjacent platoons. It is quite common for platoon leaders to assist the forward observers by telephone in bringing artillery and mortar fire close to friendly positions.

Each squad needs wire communication with the platoon leader be-

cause of the wide frontages that are the rule.

This expanded company communication system calls for 18 sound power and seven EE-8 telephones.

patrols, and as an alternate means of communication when wire is not in use. The 300's use by mortar observers did not meet with as much success because of the range limitations and interference of hill

"The trail is a narrow path starting miles back in the rear. . . ."

Q: *I see where six of the seven EE-8's go, but what about the seventh?*

A: It is for the company's kitchen-supply area back with the battalion trains. Being able to contact key personnel back there directly is highly desirable.

Q: *What about radio?*

A: The sets you will encounter most often will be the SCR 300 and the SCR 536. The 300 is a remarkably fine set for communication within the battalion, for use on masses. SCR 300's mounted in liaison type aircraft were extremely helpful in patrol and air-controlling missions in spite of the fact that the 300 was not designed for this purpose.

Much has been said and written about the failure of the SCR 536 but it all boils down to this: until a radio that can overcome the effects of hills and cold weather is issued to rifle companies in Korea, the only reliable communication in the attack between the company commander and his platoon leaders

will be by word of mouth and sight of eye.

Q: *What about the men? How is their morale?*

A: Believe it or not, morale is high along the ridgelines of Korea. lieve that anything good can come from the danger, the discomfort, and the disillusionment of the battleground; but even so, pride and self-confidence seem to be regenerated and strengthened in the men who have looked death in the face

"Life in the line means life along the ridgelines. Even if there were a choice, which there isn't, they would be there for they know there is no safer place, no better place for killing goon. . . ."

The closer you get to the shooting, the higher it gets. Don't ask why. It just is.

Not that our troops in the forward areas are a bunch of comedians — far from it. They are as serious and attentive to the job at hand as any American soldiers have ever been. But compared to the men in the rear areas, the frontline men don't gripe at all. The court-martial rate is low. Cooperation is excellent.

Perhaps there is a certain nobility about combat. It is hard to be- as a "primary military occupational specialty." Life in the line is an honest life in that no bluffing, no cheating, no deception can go undetected for long. God pity the man who tries to put something over on a frontline combat Infantryman.

It may be that some of this nobility rubs off, adding somehow to the morale of the men who really own the battleground.

Then too, when a man is fighting for his life, a lot of little things that caused him a headful of worry before simply cease to be of any

importance. Why worry about missing chow when the next five minutes may be the last?

What is true of thoughts is also true of actions. Men don't do or say petty things in the presence of death.

learned that there is no safer place to be, no better position for killing goon.*

The view up there is fine (on clear days, which are few) and the exercise is stimulating, but not to men who have been looking at

"The view up there is fine. . . ."

When you consider the life of the Combat Infantryman, his high morale is all the more uncanny. Life in the line means life along the ridgelines. Rifle companies are always up in the hills. Even if there were a choice, which there isn't, they would be there for they have

much the same view and cursing the never-ending climb for months. When you have to cut into the side of a hill for a level place to sleep, climb to get to the feeding point or to get back to your hole, or climb in the fight to the next objective, the sport of mountain-scaling loses

*For lack of a better designation, some Combat Infantrymen have taken the Korean word *imming-goon*, meaning, roughly, "People's Army" (i.e., North Korean) and shortened it to goon (Army). This is both singular and plural.

its appeal. The hills, then, are cause enough for frayed tempers.

Then, too, it's hard for a man to understand the war aims. To him, this is very much a war. He can't conceive of anyone's calling it a "police action" or anything short of what it is as he sees it. The only end he can see is victory, not in the flag-waving sense, but in the liquidation or surrender of the enemy. The how and the why of this war are behind him when he comes within M1 range of the goon; from then on, it's strictly a matter of survival of the fittest. His war aim is highly personal and not at all theoretical. His job is to get this thing, or his part of it, over with and to get the hell home again — safely and soon.

A combat Infantryman can't look forward to sleeping on anything but the ground until he gets wounded or rotated or both. Even in reserve, the life of the frontline soldier at its best is never as good as the rear area soldier's at its worst. The men know it, but they don't brood: they take what they can get and make the best of it. They are members of an entirely different army, and they know it.

The men are proud, in a quiet way. They don't boast. They don't have to: they *know* what the score is.

Sometime when things quiet down a bit, I'd like to do all the studying necessary, get all the tangled impressions in my mind straightened out, and stay with it until I get the answer. How could men be so miserable and do the gallant things they did with such uncanny high morale?

Q: *How will I react to Korea?*

A: It would be foolish, indeed, for any rotatee to say that he *enjoyed* his tour in Korea. To say such a thing is either admission of having spent the war in the rear area or is pure sarcasm, for no thinking man would seek to give the impression that this, or any war is a lark, a glorious adventure, a happy time.

Still there are aspects of service in Korea that give definite satisfaction.

The man who reaches a balance between the awareness of the misery and suffering around him and the satisfactions that come his way is most likely to emerge from the combat zone with the emotional stability he took into it. This balance is something worth seeking.

The trick, too often, is to recognize and appreciate the simple satisfactions that come in the course of day-to-day living in Korea (or any place, for that matter).

Quite apart from wonder at the high morale and the job of discovering natural leaders among new men, there are as many satisfactions — literally — as the day is long; having light enough to fight in, the resuscitating warmth of the noonday sun, the promise of rest that comes with the night. It should be a satisfaction to have a sleeping bag, or an air mattress, or an air mattress without any holes in it.

God pity the man who can find nothing for which to be grateful!

You'll find bad days ahead, that's for sure. They come uncommonly often in Korea. But when they do, (there is a great sadistic temptation here to write, SMILE!) remember — things ain't so bad they couldn't get worser.

SMALL ARMS FIRE COURSE

By CAPT CHARLES A. NICHOLSON, Infantry

EDITOR'S NOTE: *This is the second of five articles on the latest Battle Indoctrination Series, based on Department of the Army Training Circular Number 14, 28 March 1952. The first of these, "The Village," by Captain Alfred Phillips, appeared in the April* QUARTERLY. *Articles on the Attack, Infiltration, and Close Combat Courses will appear in future issues.*

With minor adaptations, the Small Arms Fire Course described in this article can be used in presentation of unit training.

Being shot at for the first time is one experience which a combat Infantryman can never forget. During the long training days, every man wonders: "How will I react? Will I just lie there and take a pasting, or will I search out the enemy and kill him?"

Initially, everyone under "first enemy fire" will feel like a duck in a shooting gallery—that every enemy weapon is firing right at him. Some men will immediately grasp the gravity of the situation and return the enemy fire. Others will be confused as to what they should do about it. Some of the soldiers won't see the enemy who is firing at them and will be reluctant to search him out and return fire. Still others will throw up their hands and do nothing because they cannot think clearly about their present situation.

The newest member of the Battle Indoctrination Series, the Small Arms Fire Course, based on Training Circular No. 14, 28 March 1952, is designed to help the individual soldier overcome the mental and psychological barrier that might be created in his mind by enemy small arms fire. It teaches the individual to locate his enemy and act to overcome this fire. The Small Arms Fire Course is designed to save lives by:

1. Familiarizing the student with the sensation of receiving aimed small arms fire close to him.

2. Acquainting the student with the difficulty of determining the source of the fire.

3. Impressing upon the student the necessity of continuing the advance against this fire.

These lessons can be taught in a tactical exercise on the rifle platoon level. This enables the platoon leader to work out some of the difficulties which he will encounter in combat such as control, immediate location of the enemy, fire and movement, fire control, distribution of fire and use of supporting weapons.

Control is one of the biggest problems the small unit leader will have when his men face the enemy for the first time (or any time, for that matter). The enemy will try

to confuse us: that's his game, and if it works, our well-trained unit may crack at the seams. Part of the problem can be licked in advance by teaching the soldier what to do and how to do it. Even a well-trained soldier who knows instantly "what" to do is sometimes stumped as to "how" to do it. At this point, the leader takes over and gives orders. If orders are not given, the unit will become more confused and very likely will not move at all.

As soon as a squad is fired upon, each man must determine for himself the location of the enemy fire. But remember: the squad must act as a single-minded unit to kill the enemy that is firing at it. If the men are trained to locate the enemy as soon as he fires, organizational unit will be maintained.

As soon as the enemy is located, his fire must be returned immediately with a large volume of accurate fire from the riflemen. The two light machine guns of the platoon must be placed where they can deliver heavy, accurate fire on the enemy position. If the enemy cannot be overcome by sheer volume of small arms fire, then other supporting weapons must be employed.

The instruction given on the Small Arms Fire Course impresses upon the student the importance of locating enemy sporadic small arms fire quickly. Then the student is given a practical exercise in locating single riflemen firing at him from various ranges.

What is the best way to teach this?

One of the most successful methods of locating single enemy riflemen is the "crack and thump" method. This method employs the sound of the rifle bullet as it splits the air overhead (the crack), the sound of the rifle as it is fired (the thump), and a quick count which gives the approximate range between the sound of the "crack" and the sound of the "thump." The most difficult part of this method is the counting. Students are taught to start counting to themselves as soon as they hear the "crack" and stop when they hear the "thump." The number on which they stop will give the approximate range to the weapon in hundreds of yards. They line up the sound of the "crack" and "thump" in their minds and thereby determine the direction of the weapon that is firing at them.

Numerous field studies were made to determine the relationship between the speed of a rifle bullet and the speed of sound. It was found that under field conditions a bullet will travel approximately 500 yards in the first second. Training students to make five counts per second, then, enables them to estimate the range from the "crack" to the "thump" of the enemy weapon. For example, upon hearing the "crack" overhead the student begins counting (at the rate of five counts per second): "one-two-three-THUMP." He estimates the range to be 300 yards and shoots at the probable location of the "thump."

Familiarity with the sensation of receiving aimed small arms fire close to individuals and acquainting individuals with the difficulty of determining the source of that small arms fire can be taught at the same time. If the unit undergoing instruction on the Small Arms Fire Course is of company size, then the instruction should be given at some central location with from five to

ten individual riflemen firing in the direction of the class from various directions and ranges (see Figure 1).

When the students have learned how to locate enemy weapons, they are then ready to begin a platoon attack problem, in which an enemy detail fires ball ammunition at the

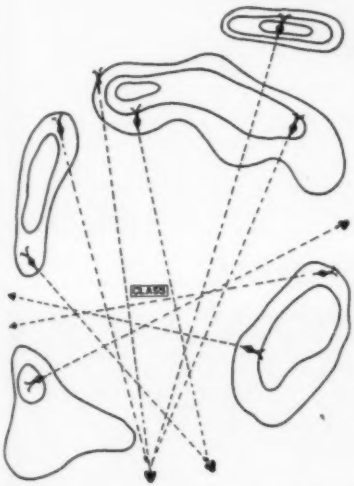


Figure 1. Area layout for "crack and thump" training.

advancing platoon. The use of ball ammunition in the exercise gives the individual "the feel" of small arms fire close to his position and also gives him the opportunity of using the "crack and thump" method in locating the weapon firing at him. Obviously, for safety reasons, the platoon should be issued blank ammunition.

How should the Small Arms Fire Course be set upon the ground? The actual layout of the course must be consistent with Department of Army Safety Regulations 385-310-1 (with changes). The two most important safety factors to remember are that rifle fire cannot be delivered over the heads of troops, and it cannot be fired any closer than five degrees from the flank of troops. It is well to fix the rifles and machine guns that will fire ball ammunition in a frame or rest, thereby prohibiting lateral or vertical movement of the weapon.

The rifle mount should be solidly constructed and be "custom made" for each rifle so that the rifle will not move once it is fastened into the mount. The mount must be firmly seated into the ground. This can be done by using four pieces of sturdy scrap iron as vertical supports. Each pair of vertical supports may either be driven into the ground or set into 8x8x12-inch blocks of concrete. If the latter method is used, the blocks should be buried in the ground to a depth of about eighteen inches. The rifle mount is then bolted between the two pairs of vertical supports. (See Figure 2a).

In firing the rifle from the mount, the rifleman takes his place on the left side of the mount as it faces down range. (See Figure 2b.)

Such subjects as troop leading procedure, combat formations, and combat orders can easily be integrated into the small unit tactical exercises given on the Small Arms Fire Course.

During the attack planning phase, students are given a chance to make a short reconnaissance and prepare an attack order. When the

Figure 2. a. Custom-made rifle mount.

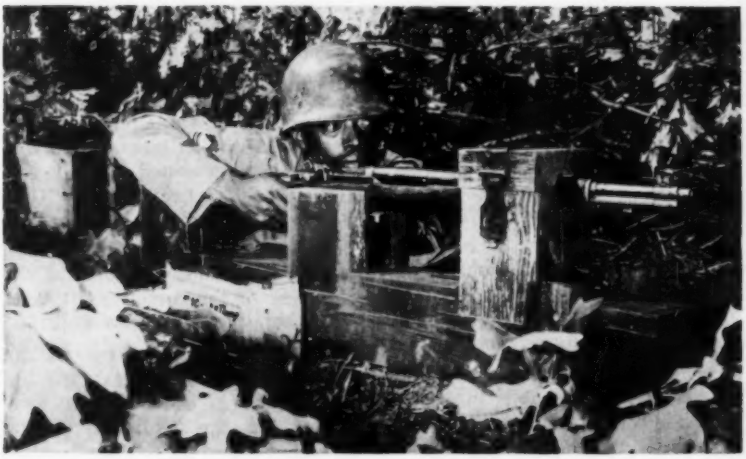


Figure 2. b. Correct position for firing M1 rifle from mount.

attack orders are completed, the instructor calls upon various students to give their solutions. The solutions are discussed, with the result that the best student solution is put into effect when the unit

negotiates the attack lane.

Attack lanes should be chosen which allow from 800 to 1000 yards between the line of departure and the platoon objective. The weapons in the enemy detail firing ball ammunition are located along the flanks of the lane and at varying ranges. A lane control point is selected at some prominent place, along either flank of the lane, which gives unobstructed vision over the entire lane. A responsible officer should be placed in charge of control with EE8 telephone communication to each firing position in the enemy detail. Also, visible phase lines are established throughout the lane. When the advancing platoon reaches each phase line, the control officer orders the weapon covering that phase line to open fire (see Figure 3). Communication between the control officer and the rifle platoon is maintained by radio.

Inasmuch as the Small Arms Fire Course is conducted as integrated training with small unit tactical exercises, it is highly desirable that a few members of the enemy detail be placed on the objective to force the attacking platoon to launch a normal assault. For safety reasons this detail fires blank ammunition only.

Demolition pits can be used throughout the lane to simulate artillery and mortar fire. These fires can be called for by the platoon leader and put into effect by the control officer.

The officer responsible for conducting the Small Arms Fire Course must make a thorough study of the munitions to be used during the operation of the course. The ammunition requirements should be analyzed to insure that minimum amounts are being used without sacrificing maximum training value.

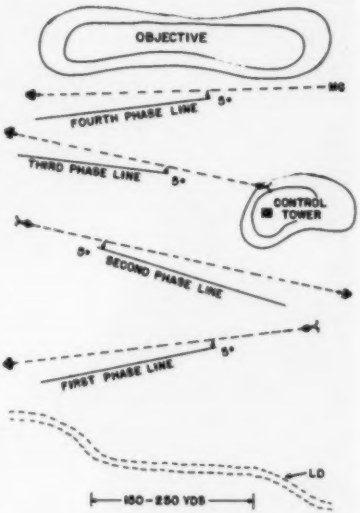


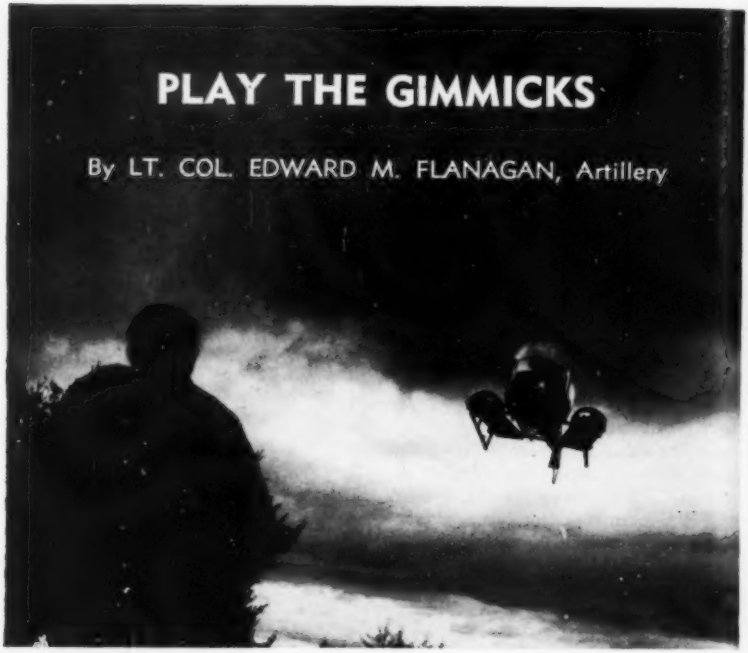
Figure 3. Attack Lane.

The course should be set up so that various units within a post can be rotated through the course. This will permit effective utilization of time, equipment, terrain and instructors.

The Small Arms Fire Course rightly deserves a place in the Battle Indoctrination Series. Students negotiating the course will experience the sensation of having small arms fire directed at them, they will learn how to locate sporadic enemy small arms fire, and they will be impressed with the necessity of continuing to advance against sporadic enemy small arms fire. The Small Arms Fi.e Course fills a wide gap which once existed in our Battle Indoctrination training.

PLAY THE GIMMICKS

By LT. COL. EDWARD M. FLANAGAN, Artillery



The point of C Company fired three shots in rapid succession — the prearranged signal for enemy in sight. The CO, halting his advance, deployed the company, totally unaware that he was in an extremely difficult and precarious position. He was surrounded on three sides by the enemy, he was lost, his men were thoroughly wet from an incessant tropical rain, and he was cut off from the rest of the regiment. Fortunately the regimental commander was with C Company which, until the three shots announced the presence of the enemy, was moving forward to contact the Japanese in the rain drenched, mud covered, vine entangled hills of Leyte. Later, the company commander allowed that he was glad the regimental CO was along on that trip — explanations at a later date might have sounded hollow and exaggerated.

The regiment had stepped off transports only the preceding day. And the fact that it was in combat so soon — when originally it was to have bivouacked on the palm lined beaches for a month or more — emphasized the urgency of the situation.

C Company was leading the regiment into the hills. Maps were erroneous and vague. The incred-

ibly difficult terrain had never been mapped with even a pretense of accuracy. Trails which on the ground went one way appeared on a map in a different location heading in a different direction, if they appeared at all. Collections of huts on the ground were non-existent on maps. Trail crossings were considered accurate if within 1500 yards of their actual location. Steep sided streams twisted along rocky bottoms through jungle covered mountains. The situation was difficult. It got almost desperate when the enemy, hardened to the terrain, stealthy by nature, surrounded the company completely except for a trail leading from the rear of the company.

C Company started its first combat. The company dug in. It was not able to move forward or rearward. For two days C Company tried to fight its way out of its trap. The effort left the company low on food, ammunition, and morale. Help was needed immediately. The company commander decided to try to get word out. He had to send a runner because by radio he could not indicate his position — he was lost. Even if he were not, there were no maps on which higher headquarters could plot his location.

The company commander picked a trusted non-com, briefed him thoroughly, told him to find the division headquarters, and report the situation. He patted him fondly on the back and never expected to see him again. The next day, however, the runner found the division headquarters where he learned that C Company had been given up for lost. The division had been searching for it, trying to contact it by radio, trying to find it with light aircraft, but no trace had been found until the runner arrived.

The unique solution to C Company's difficulties bears witness to the profits deriving from imaginative thinking and prompt action on the part of planners. The G-3 alerted a company of Infantry, had them sent to the division airfield (where all the light aircraft of the division were centrally located) and had parachutes sent to them (this was an airborne division). Then the runner from C Company was loaded into a light aircraft. He led the division G-3, in another plane, to where C Company was located. Into each of the remaining light aircraft of the division was loaded one trooper. The procession from the field to C Company began. A drop zone within C Company's lines — nothing more than a wide part in a trail — was located and as each plane came over, one man exited therefrom. Then the plane went back to the strip, picked up another waiting soldier, flew him in, dumped him out, and went back again. Finally, the whole company was on the ground. By the same method supplies were delivered to the fatigued company which by now was down to a third of a K ration per man per day. No one needed to be warned to shoot sparingly and accurately.

The two companies carried on the fight supplied by the light aircraft which delivered the goods. The pilots flew on days when ducks were grounded. They flew up through the overcast, then by dead reckoning to the target, then down through a hole in the stew if they were lucky, dumped their cargo and went back

for more. As in all success stories, most of them lived happily ever after. C Company fought its way back to the rest of the regiment, and the regiment went on to accomplish its mission.

The part played by two units in the above incident bears closer attention. The light aircraft unit that delivered the troops and equipment and the troops themselves who jumped from the light aircraft together form a team of varied potentiality. Their missions are limited only by the imagination of the commander controlling them and the availability of light aircraft.

The Army aircraft of the 11th Airborne Division played a major role in that unit's back-breaking, fighting march across the rain drenched, jungle covered, razor backed ridges of Leyte. The division MSR was a corridor in the air from the division air strip at Burauen to the postage stamp-sized drop zones in the hills. But flying the supplies in, even though limited to about 250 pounds per trip, was much simpler than trying to hand carry them over tortuous mountain trails. Carabao pack trains were tried and found wanting — the carabao could not, or perhaps would not go, where a soldier on foot could and did go. Besides, carabao were plodding beasts incapable of even a slow motion double time.

Native bearers were tried and failed because of limitations on the load capacity per each. Trucks and jeeps bogged down in the two foot deep mud outside Burauen before ever getting near the hills. Weasels were too wide for the narrow trails in the hills. Boats, probably the nearest thing to a solution in the mud, were most difficult to row up hill. Obviously, if progress could not be made through the mud, it was necessary to go over it. Light aircraft became the solution to the supply and reinforcement problem.

Because two battalions of artillery of the 11th Airborne Division had been divorced, reluctantly, from their pack 75's and, carbine in hand, had walked into the hills — just like Infantry — the light aircraft of those units were available on a full time basis for resupply missions. And the "New Guinea Short Lines," an L-5 Air Force courier outfit, was prevailed upon to spend most of its time hauling ammunition, food, medical supplies, and clothing for the 11th Airborne Division. With all the L-4's and L-5's from the division and with the L-5's from the N.G. Short Lines, a most remarkable system of aerial resupply was instituted.

A supply packaging unit was located at the division strip. That unit packaged the equipment in light-aircraft size loads. A dispatcher assigned a load and a drop or landing zone to a pilot. Mission in mind, the pilot took off for his target, delivered the goods, and came back for another load. Distances were so short that on days with good weather pilots were able to make 10 trips a day. At peak capacity the "Biscuit Bombers" delivered 21 tons per day to grateful units in the hills.

Later an air strip was hacked out of a mountain plateau and supplies could be airlanded there. The strip became the hub for subsequent operations in that area, and because the planes could land, they could pick up wounded and haul them back to the hospital outside Burauen. Many lives were saved by

the air milk run from the strip in the hills to the hospital.

And it took tricky flying on the part of the pilots. The strip in the hills had to follow the path of least resistance because it was hacked out of the jungles with machetes and entrenching tools. Consequently, because the path of least resistance curved, so did the strip. Pilots bumping down the runway had to make a turn just as the wheels were coming off the ground. The troops clustered around the strip always expected to see a light aircraft spin around on one wing. It's a tribute to the skill of the pilots that no planes or lives were lost banking off that ground — freely termed a runway.

Bigger and better operations of the type described above have been conducted in the past. And even bigger and better ones will be conducted in the future. Dropping a company to reinforce a demoralized, battered, hungry unit is a small scale operation hardly mentioned in the press. Ferrying in supplies by the teaspoonful to isolated units fighting a miserable battle against mud, heat, fatigue, thirst, lack of ammunition, and Japs was normal operation — nothing spectacular. And hauling wounded out in light aircraft, with the stretcher banging against the head of the pilot hardly calls for jumping with joy. But it shows imaginative use of the only facilities at hand to get a job done. Our methods for doing those jobs will change in the future; but the jobs will need to be done as long as wars are fought.

Today in Korea the helicopter is doing the biscuit bombing and wounded hauling; the helicopter has moved companies up sheer mountains, and deposited them on top, doing away with the scratching, clawing, inching progress of a doughboy up that same mountain in the face of enemy fire. Methods will continue to improve; but the same old problems remain to be solved. As long as Infantry is going to be necessary, the Infantryman's problems in combat are going to be present. Imaginative, economical, systematic, coordinated, planned use of the facilities at hand can turn an impossible job into a victory. We won't have manpower superiority; we've got to have ingenuity. Every man must be made to do more than one man is normally expected to do.

Move him by air in a light aircraft or a helicopter; supply him by air if its faster; evacuate him by air to save him. Men are important. Take advantage of all the gimmicks, all the ingenuity which can be developed, in order to make that man better for himself and for the task at hand.

A gimmick doesn't have to be a thing. A gimmick can be a new idea, a new solution to an old problem. The use of the air as an avenue to combat must be used more often. Even that is not a new gimmick. But its frequent and unusual use might be. And that's just one more way of making our manpower do double duty.

BATTLE SIGHT ZERO

CAPT GEORGE D. CROSBY, Infantry and
CAPT ALBERT J. CRUPI, Infantry

"How do you zero your rifle? Why you just put 15 clicks of elevation on it, soldier."

Have you ever given that answer to one of your men in combat? Given him that answer because the situation wouldn't permit his actually zeroing it on a 300-yard range — the range for a "battle sight" setting?

And did you ever feel uneasy — even guilty — about giving him that answer, knowing full well that while some rifles do actually have a battle sight zero of 15 clicks, many, many others are zeroed at 6, or 17, or even 30?

So what happens? The soldier innocently turns the rear sight up 15 clicks and goes into the fight firm in the belief that he's going to be able to hit what he's shooting at. Maybe he will — and maybe he just happens to have a rifle that would have been zeroed at more or fewer than 15 clicks. Then when he finds he's not hitting his targets he loses faith in the accuracy of the weapon and loses confidence in himself as a marksman.

The result will be that his aimed fire will be no more effective than unaimed fire. You have one more name on the roster, one more mouth to feed but you haven't added one slug to your effective firepower.

"But," you say, "what can I do about it? We can't scare up a 300-yard rifle range every time we have a new rifle to zero. Fifty yards we might have. But a 50-yard range isn't going to do any good when we're trying to get a battle sight zero."

And that's where you're wrong. You *can* get that 300-yard battle sight setting on a 50-yard range. What's more, you can get the 400-yard zero of a sniper rifle, caliber .30 M1C on the same range. And the 200-yard zero of a carbine, caliber .30 M2. All on a 50-yard range. And you can get the 125-yard zero on the sniperscope, infrared set No. 1, 20,000 volts on a 25-yard range.

The Office of Army Field Forces has recently approved a field expedient method of obtaining the approximate battle sight zeroes of these weapons while firing at 50 yards.

This method can be taught anywhere, is surprisingly accurate, and there are few situations where it can't be used. It doesn't require a known distance range; needs no special equipment; and requires little time and ammunition.

Tests conducted at The Infantry School not only show that this method will zero a rifle but, once his rifle is zeroed, the firer gains new confidence in his marksmanship ability.

Roughly, here is the principle

behind the method. You know that when a rifle has a sight setting to hit a target 300 yards away, if that sight setting is used when shooting at a target only 50 yards away, the strike of the bullet will be well above this nearer target. In the case of the M1 Rifle a 300-yard zero will cause the bullet to strike 4½ inches above the point of aim when aiming at a target only 50 yards distant. Therefore, we aim at a target 50 yards distant and when our shot group appears 4½ inches above the point of aim on that 50-yard target, we know that we have a zero that will hit a bullseye 300 yards distant.

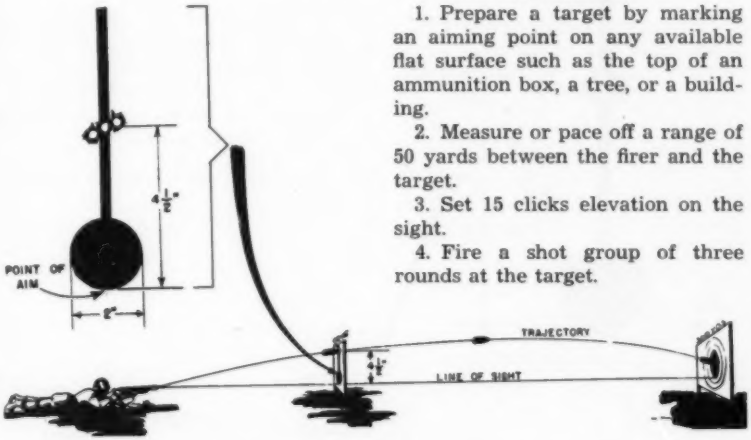


Figure 1. Correct shot group for M1 Rifle.

The height above the 50-yard aiming point for the battle sight zero of other weapons varies. For the M1C, the sniper rifle, the strike should be 7 inches above the 50-yard aiming point to get the 400-yard battle sight zero. For the M2 Carbine, it should be 5½ inches above the 50-yard aiming point for a 200-yard battle sight zero. For the sniperscope, it should be 2½ inches *below* the point of aim.

The detailed procedure for this method of zeroing various Infantry small arms follows:

M1 RIFLE

1. Prepare a target by marking an aiming point on any available flat surface such as the top of an ammunition box, a tree, or a building.

2. Measure or pace off a range of 50 yards between the firer and the target.

3. Set 15 clicks elevation on the sight.

4. Fire a shot group of three rounds at the target.

5. Examine the target. If the shot group is centered 4½ *inches* above the point of aim, your rifle has the 300-yard battle sight zero. If your shot group is off this point, make the sight changes necessary to move the shot group to the point centered 4½ inches above the point of aim. One click change in either elevation or windage will move the center of your group ½ inch at this range.

6. Fire the second shot group of three rounds. If your estimate of the sight change necessary was cor-

rect, this group should be centered 4½ inches above the point of aim. (See Figure 1.)

7. If necessary, repeat steps 5 and 6. Normally it should not be necessary to fire more than nine rounds to obtain the battle sight zero of the rifle.

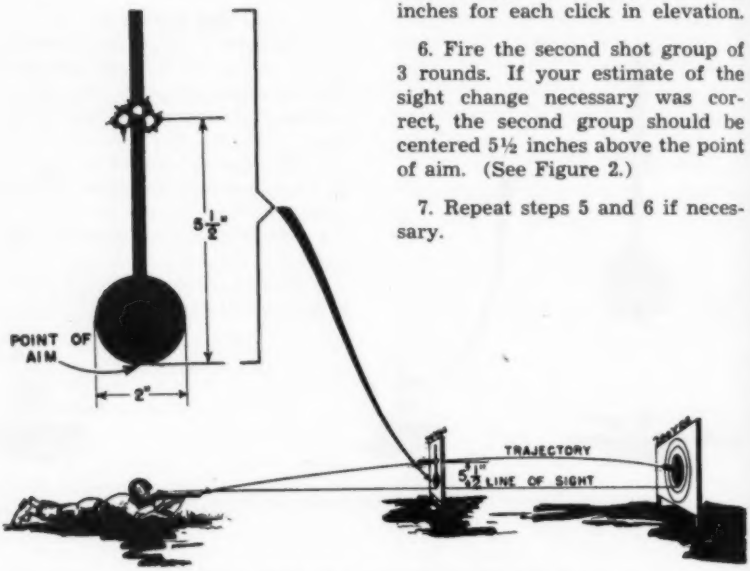


Figure 2. Correct shot group for M2 Carbine.

M2 CARBINE

1. and 2. Same as for the M1 Rifle.

3. Place the 200-yard setting on the sight of the carbine.

4. Fire a shot group of 3 rounds at the target.

5. Examine the target. If the shot group is centered 5½ *inches* above the point of aim, your carbine has the 200-yard battle sight zero. If your shot group is off this point, make the sight changes necessary to move your shot group to a point 5½ inches above the point of aim. The strike of the bullet will be changed ½ inch for each click change in windage, and 2½ inches for each click in elevation.

6. Fire the second shot group of 3 rounds. If your estimate of the sight change necessary was correct, the second group should be centered 5½ inches above the point of aim. (See Figure 2.)

7. Repeat steps 5 and 6 if necessary.

M1C SNIPER'S RIFLE

1. and 2. Same as for M1 Rifle.

3. Place the theoretical battle sight on the telescope* — zero windage.

4. Fire a shot group of 3 rounds at the target.

5. Examine the target. If the

*The theoretical battle sight (400 yds) setting on the M81 and M82 telescope is zero dial reading plus three clicks in elevation.

shot group is centered 7 *inches* above the point of aim your M1C has the 400-yard battle sight zero. If your shot group is off this point, make the sight changes necessary to move your shot group to the point 7 inches above the point of aim. One click change in elevation or windage will move the center of your shot group ½ inch.

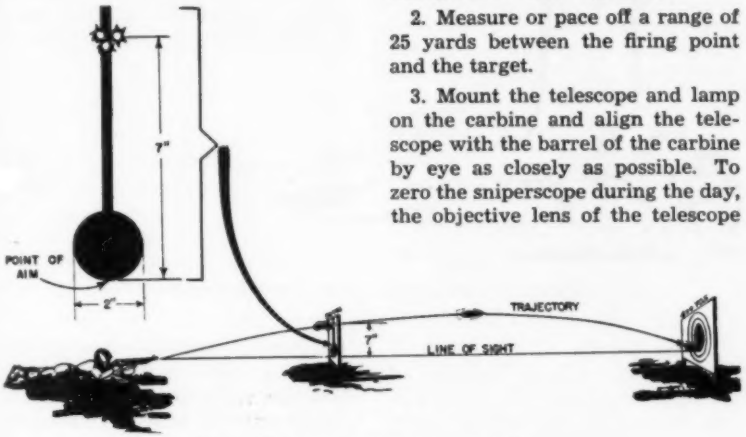


Figure 3. Correct shot group for M1C.

6. Fire the second shot group of 3 rounds. If your estimate of the sight change necessary was correct, this second group should be centered 7 *inches* above the point of aim. (See Figure 3.)

7. If necessary, repeat the 5th and 6th steps.

Note: The Sniper's Rifle and Telescope are supposedly issued as a matched pair; however, this is not always the case. It has been found that this method of zeroing the M1C has advantages in obtaining the initial zero even though a known distance range may be available.

SNIPERSCOPE, INFRARED SET NO. 1, 20,000 VOLTS

1. Prepare a target on which an aiming point approximately 6 inches in diameter has been marked with a vertical line extending downward from the center of the aiming point. This figure should be darker in color than the target background. (See Figure 4.)

2. Measure or pace off a range of 25 yards between the firing point and the target.

3. Mount the telescope and lamp on the carbine and align the telescope with the barrel of the carbine by eye as closely as possible. To zero the sniperscope during the day, the objective lens of the telescope should be covered with cardboard to prevent sunlight from damaging the image viewing tube. Make a pinpoint aperture in the center of this cover.

4. Fire a shot group of three rounds.

5. Examine the target and adjust the sights from the strike of this group so that the next group of three rounds will be centered approximately 2½ *inches below* the point of aim. At a range of 25 yards, one quarter turn of the azimuth adjusting screw will move the strike of the bullet approximately 1¼ inches to the right or left. One

sixteenth turn of the reticle adjusting nut will move the strike of the bullet up or down approximately 1½ inches.

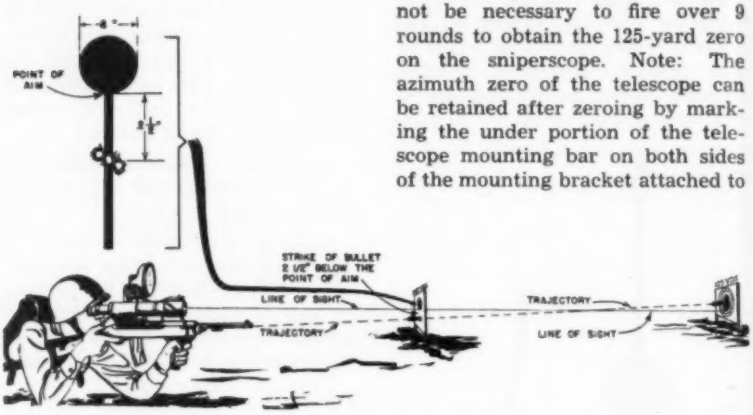


Figure 4. Correct shot group for Sniperscope.

6. Fire the second shot group of three rounds. If your estimate of the sight change necessary was correct, the second shot group should be centered 2½ *inches below* the point of aim. (See Figure 5.) This is the 125-yard zero of the weapon.

7. If necessary, repeat the 5th and 6th steps. Normally, it should not be necessary to fire over 9 rounds to obtain the 125-yard zero on the sniperscope. Note: The azimuth zero of the telescope can be retained after zeroing by marking the under portion of the telescope mounting bar on both sides of the mounting bracket attached to the carbine. By doing this, and by matching the telescope and carbine, the telescope can be mounted on the carbine at any future date by matching these marks.

The advantages of successful war are doubtful; the disadvantages of unsuccessful war are certain. Real security lies in the prevention of wars — and today that hope can come only through adequate preparedness.

General of the Army Omar N. Bradley

A QUESTION FOR COMMANDERS

By CAPT FRANK P. JONES, Infantry

How many commanders *really* believe in the usefulness of combat intelligence? Few, if any, would blaspheme professionally by openly questioning its value. But, how many company, battalion, and regimental commanders, in their training and combat time-allotment, give this vital discipline a real impetus within their own units? Combat intelligence, I submit in answer, has more lip-servants than overseers; more school-room salaams than drill-schedule disciples.

There are, of course, intelligence-conscious commanders whose insistence on a realistically efficient intelligence program, in combat or out, refute my opening assumption. They are, unhappily, far too few in number. I offer as a demonstrably-provable fact that combat intelligence, when laid on in battalions and regiments, has both helped to do the fighting job and saved lives in the process. Why then are there *still* officers who let this staff tool slip through their fingers by default? Let's take a brief look at some of the reasons for this command failure. These are as varied and illogical as some of the individuals who accept them:

1. "The Priesthood of Intelligence Officers."

Read the following "appreciation"* and see if you can make any sense out of it. Needless to say, it's a satire, but remember, to be effective a satire has to have *some* basis in fact.

"While it cannot be said that Rundstedt's offensive achieved its object of changing the Allied time-table, it has undoubtedly made some alterations necessary in that time table. It has postponed rather than delayed an offensive, and in that sense above, may be said to have lengthened, but not prolonged

*Page 4, "Dissemination of Combat Intelligence," Intelligence Division, Ground General School, Fort Riley, 18 May 48.

the war. The Allies were not surprised, because they know the possibility of a surprise attack. What surprised them was that the Germans thought it worthwhile to make a surprise attack, in spite of the fact that such an attack, though deemed possible, was not deemed probable, in view of the fact that we knew they would try to surprise us."

We all recognize the above as gobble-de-gook of the highest order. The lesson is clear. Commanders should insist that their S2, over their (the commander's) name disseminate clear, concise, and meaningful intelligence. There should never be an "intelligence priesthood" on any level. Intelligence is a vital command tool; never a mystic cult.

2. "Don't Tar Me with *That* Brush!"

Before World War II, many professional officers felt that an intelligence assignment was only about one short uneasy step above reclassification. The mission of a combat intelligence was in the nebulous future. Other staff sections could aid the commander in his day-to-day planning *now*. As a result, battalion and regimental intelligence officers were often chosen more for their professional inaptitude than job aptitude.

3. "I've been in this man's army more years than that kid (the S2) is old!"

Let's face it. A staff relationship between commander and subordinate is more than a rigid shaving of the work load. It is also a warm human and social relationship. In the vast majority of cases the commander is older than his staff officers; often by 15-25 years. In such a set-up many commanders cannot help but feel the same sentiments towards their staff family as they do towards their own family. In this social situation the S2 often finds himself the junior on the staff; in years as well as experience. A commander who welcomes help and constructive criticism on the many vital details concerning personnel, operations, and supply cannot bring

himself to accept his intelligence officer as the same kind of specialist. This commander would prefer to "sense" the capabilities of the enemy, rather than have his youthful S2 present them to him in systematic fashion. Perhaps, in this case, the commander's own professional pride works against his fully utilizing his young intelligence officer. Whatever the underlying reason may be, many command failures are often summed up in a quasi-belligerent "I've been in this man's army more years than that kid is old."

4. "I Never Take Counsel of My Fears."

To a certain extent, an intelligence officer can be likened to a friendly but persistent life insurance salesman. An efficient S2 takes every conceivable step to avoid his unit's being surprised and annihilated. In this capacity, he may advise his commander to clear out that high ground before barreling down the road; probe with patrols before lunging forward. An attack-minded commander may, on the other hand, see in this well-intentioned advice only the unfortunate result that it will slow the forward impetus of his action and allow the enemy time to regroup. "Better ten casualties today than one hundred tomorrow" is accepted attack doctrine. It would be a foolish and short-sighted S2 who ever forgot this fact by urging that an attack be braked short to an unnecessary halt. Likewise every commander

should realize that today's cakewalk could be tomorrow's blood bath. The solution here, as in all things, is command flexibility and mutual trust. A heads-up S2 should never be unduly impressed by our weakness and enemy strength. Senseless fear-mongering on the part of an intelligence officer is like the parable of the boy who cried "wolf." Some day that "wolf" may be across the next hill from us and a smart commander will want to know that particular wolf's predatory capabilities. To the commander who proudly states "that he never takes counsel of his fears," one might reply, "That's swell, sir! *But, please make your intelligence officer take counsel of his.*"

5. "Never saw any of this Intelligence Fol-De-Rol used in combat!"

Many things are done in combat; some well, some not. Simply because a certain action is taken *in combat* does not, in itself, sanctify it. The only worthwhile test is *did it work in combat*, and if so *is it beyond any improvement*? The use of intelligence forms and terms will vary from battalion to battalion; from regiment to regiment. What *should not* vary from unit to unit is the high caliber of combat intelligence being produced, the effectiveness of a unit's counter-intelligence measures, and the ability to appraise the effect of weather and terrain on that unit's mission. Many units use suggested or individual forms to make sure that they "touch all these bases." Some do not. The thing to remember is that intelligence work forms both teach principles and fix habits. Most units use them in combat to some degree. I would personally not enjoy replacing a battalion or a regimental S2 who kept it all in his head. The transfusion of information might take an uncommonly long time.

* * *

If my plea for increased intelligence-awareness has appeared to some readers as presumptive and unenlightening, let it be said that this article was not written to define or explain combat intelligence (FM 30-5 does that job), but rather as a frank appeal to battalion and regimental commanders to search both their training schedules and their consciences in answer to my question; are you *demanding* and *receiving* effective and meaningful combat intelligence in your unit? If your answer is "no," you may be *commanding* or you may be *America's next soldier "known but to God."*

A well established maximum of war is not to do anything which your enemy wishes — and for the simple reason that he does so wish.

Napoleon

THE MORE WE GET TOGETHER

By MAJOR CHARLES B. HAZELRIGG, Infantry

EDITOR'S NOTE: *Expediency — which frequently brings with it departures from doctrine — usually marks the early days of every war. This is due to "the situation," of course, but a great part of "the situation" can be improved in advance if confusion, lack of coordination, and a certain amount of ignorance are anticipated and countered during the pre-combat training phase.*

In "The More We Get Together," Major Hazelrigg presents the problem in terms of what happened in Korea, where he commanded tank companies in the 2d Infantry Division. He cites examples of the mutual misunderstanding of the early days. As units and commanders gained experience this gave way to application of sound doctrine and appreciation of the other fellow's capabilities and problems.

All too often in combat, problems have come up between tankers and Infantrymen that have delayed the completion of the common job at hand. Many of these problems are due to ignorance or a lack of understanding of the other fellow's point of view. The solution to most of these problems is a simple one: cooperation.

To begin with, the tanker within the Infantry division must realize that his sole reason for existence is to do everything within his power to assist the rifleman in the accomplishment of his mission.

But: rifle unit commanders must permit the tank unit commander to command his tanks.

I can recall several occasions in combat when rifle unit commanders ordered an individual tank into an action or situation without the tank platoon leader's knowledge. This is the equivalent of a battalion commander ordering the flank squad of a company on a patrol without informing the platoon leader or company commander of his action. A tank unit is trained and organized to fight as such and the unit commander must be permitted to fight it.

On one occasion in Korea, the tank commander refused to carry out an order because he knew that his tank could not negotiate the rice paddies that he was ordered to cross. The ordering officer, a

battalion S-3, persisted in his demand that the sergeant try to cross the paddy. It required the intervention of myself, my battalion CO and finally the officer's own battalion CO to convince the S-3 that the sergeant knew his business; and that the tank could not possibly have gone more than two feet into the paddy without bogging down completely.

Figure 1. The need for mine-clearing personnel must be understood and appreciated by all.

Too, Infantry leaders must realize that tankers must conserve their ammunition until they have a definite firing mission or a visible enemy or known enemy-occupied position to fire on.

Ammunition resupply in Korea was extremely difficult due to poor roads and long distances from ammunition supply points. Conduct of fire reconaissance with 76-mm and 90-mm ammunition increases the number of supply trucks needed therefore further congesting greatly congested roads, and is wasteful of hard-to-get ammunition. The .50 and .30 caliber machine guns are far more effective for fire reconnaissance and are the only tank weapons that should be used.

On the other hand, pot shots at individual enemy with the tank cannon is a very effective demoralizer. In September 1950, during the

long seige of Hill 201 on the Naktong river, three platoons of my company were so disposed around the hill that nothing could move on the hill during daylight without being seen by one or more tanks. Each time an enemy exposed himself some tank threw a 76 or 90-mm high explosive round in his direction. After five days of this a number of the enemy surrendered, including a North Korean major. The entire group stated that they had given up because of the tank fire. They stated that they could stand the small arms, mortar, and artillery fire, but that the inability to move without being pot-shot at by a tank had made them nervous wrecks.

My company fired 2½ basic loads of ammunition in one day against Hill 201 and on many occasions throughout my time in Korea fired 1½ basic loads in a day. It is my belief that if the enemy is present on an objective, and the fire from tanks can kill or shock him into a softer touch for our riflemen, or if the ammunition expended saves the life of one of our soldiers — then the ammunition is not wasted.

Infantry commanders must appreciate the need for mine clearing personnel to precede tanks during an advance. I have had numerour rifle unit CO's ask "Why in hell can't the tankers get out of their tanks and clear mines for themselves?"

The answer is, the tank is a four-weaponed fighting unit. It requires the entire crew's presence in the tank to operate the tank and its weapons. If the tank crew, or part of the crew are out of the tank it is nothing but a sitting chunk of steel unable to loose its fire power on the enemy. Therefore the tank must remain manned for the security of the mine clearers, the supported or supporting riflemen, and the tank itself. It is, of course, impossible for a mine clearing party to perform their job if they come under small arms or heavy mortar or artillery fire. To me, that is the only time that a mine clearing party should not be preceding tanks. On such occasions the tanker must be prepared to take his chance with the mines if the enemy is to be destroyed and the advance continued. However, if the mines up to the point of advance have been in great numbers it would be a foolish expenditure of tanks to advance into more. In a case of this kind the rifleman, supported by tank and other supporting fire if possible, must be prepared to reduce the enemy opposition so that the advance can continue.

A rifle unit commander must tell the tank unit CO of his plans and, if time permits, allow the tank CO time to conduct a reconnaissance prior to making his recommendations for the tank end of the operation; and to brief his tank platoon leaders and/or tank commanders.

The above "must" is an old standby SOP, but it is amazing to me the number of times rifle unit commanders planned an operation, to include the tank support phase, without consulting the tank unit CO. On several occasions in Korea I have been told of an attack on an objective to be supported by tank fire only a few minutes before jump off time. Occasionally the tank support could be given, but most of the time it was impossible. On one occasion my company was four

miles from the objective when I was told of the company's part in an attack jumping off 10 minutes later.

Tanks and wire appear to have a mutual love for each other. If there is an improperly laid wire and a tank in the near vicinity, they invariably get together at a cost of 50 or more feet of wire tangled in the tank's track, a battalion or regimental commander screaming at the top of his voice, and some poor Lt. Tank Platoon Leader standing at attention until his legs cramp. If wire is laid as directed in FM 7-24, **Communication in Infantry and Airborne Divisions,** and the tanker uses a reasonable amount of caution, most communication lines will remain intact where tanks operate, and many otherwise calm individuals will remain calm!

Supply and maintenance support created a great number of problems in Korea. The Infantry regiments, although equipped with a regimental tank maintenance section within the motor maintenance platoon of the service company, could not properly support the regiment's tank company because of the lack of trained tank mechanics, insufficient replacement parts, incomplete tool sets, and inadequate recovery equipment.

Figure 2. Tanks supporting Infantrymen in an offensive mission.

It was impractical for a regiment or battalion to render adequate supply support to a tank company of the division tank battalion in

support or attached. Often the support or attachment lasted no more than one or two days making it impossible to arrange for and start receiving rations. If — as happened to my company a number of times — the tank company was suddenly sent off to join a different battalion or regiment within the division prior to ration issue time, we received no chow.

Figure 3. Tanks supporting Infantrymen on a defensive position.

Most missions assigned to the Tank Company were support of rifle companies and battalions in offensive or defensive actions. Fires were laid on specific mountain objectives from a valley parallel or adjacent to the objective. Moving tanks into positions where they were not masked from their target at times became very difficult. At times hills not too steep to climb could be used, or one or more tanks, adequately overwatched by other tanks could be worked into the draws leading to an objective or enemy-occupied hill. It was often necessary to take the tanks into enemy territory in order to place fire where wanted, necessitating the use of part of the tanks to engage enemy in locations other than the objective.

Shooting up our own troops was avoided by use of the tank's AN/VRC 3 radios netted with the rifle unit commander's SCR 300 radio, and by the lead man of an attacking force wearing a square piece of a cerise panel tied to his back just in case of radio failure, or by contact between myself and the battalion commander concerned when I lifted or adjusted fire as he de-

sired by means of my SCR 508 radio.

A number of times when a defensive line was being held, tanks were taken rapidly into enemy territory with a "demoralizer" mission of "shooting up a storm." PW statements confirmed the demoralizing value of some of these shoot 'em up missions.

During the early days of my Korean experience it was difficult to obtain riflemen to ride or accompany tanks on a patrol or attack mission. After some months of action the trend gradually became to overdo rifle support to the tanks. On daylight patrols tanks need only sufficient riflemen to secure the high ground above road cuts, and anti-tank mine or engineer personnel to sweep or probe for mines if the enemy is using them. A tank platoon has sufficient fire power in its five artillery pieces and 15 machine guns to handle almost any imaginable enemy contact. A ratio of four riflemen per patrol tank is, I believe, sufficient. It is possible to jam four extra men inside a tank if it becomes necessary to run a machine gun or small arms gauntlet, or if the patrol comes under artillery and/or mortar fire. More than four men on the tank forbids protecting the additional men with the tank's armor and, to my mind, unnecessarily exposes the additional men to danger.

There are no problems confronting tankers and Infantrymen that cannot be solved through cooperation. This cooperation — appreciation of what the other fellow can and cannot do — is the secret of success in Korea and everywhere else we may be employed together.

Maximum military effectiveness demands the highest kind of business efficiency so as to get the most out of the men, money, material and time available with which to defend our country.

General Joseph T. McNarney

THE WIREMOBILE

By CAPT JOSEPH D. SMITH, JR., Infantry

EDITOR'S NOTE: *The ideas expressed in this speculative article are those of the author and do not necessarily reflect the views of The Infantry School.*

How many of you Commo's in our vast and ever demanding communication field have at some time or other pulled your hair (or had it yanked by the CO) because the wire line failed? Thousands of dollars worth of equipment available, but you couldn't reach a unit just a few miles away. I am intimately familiar with such incidents.

For the past eight or nine years, I have served as a battalion or regimental communication officer. I also served a tour in Korea where the terrain made radio communication so unreliable we were forced to depend more and more upon our wire.

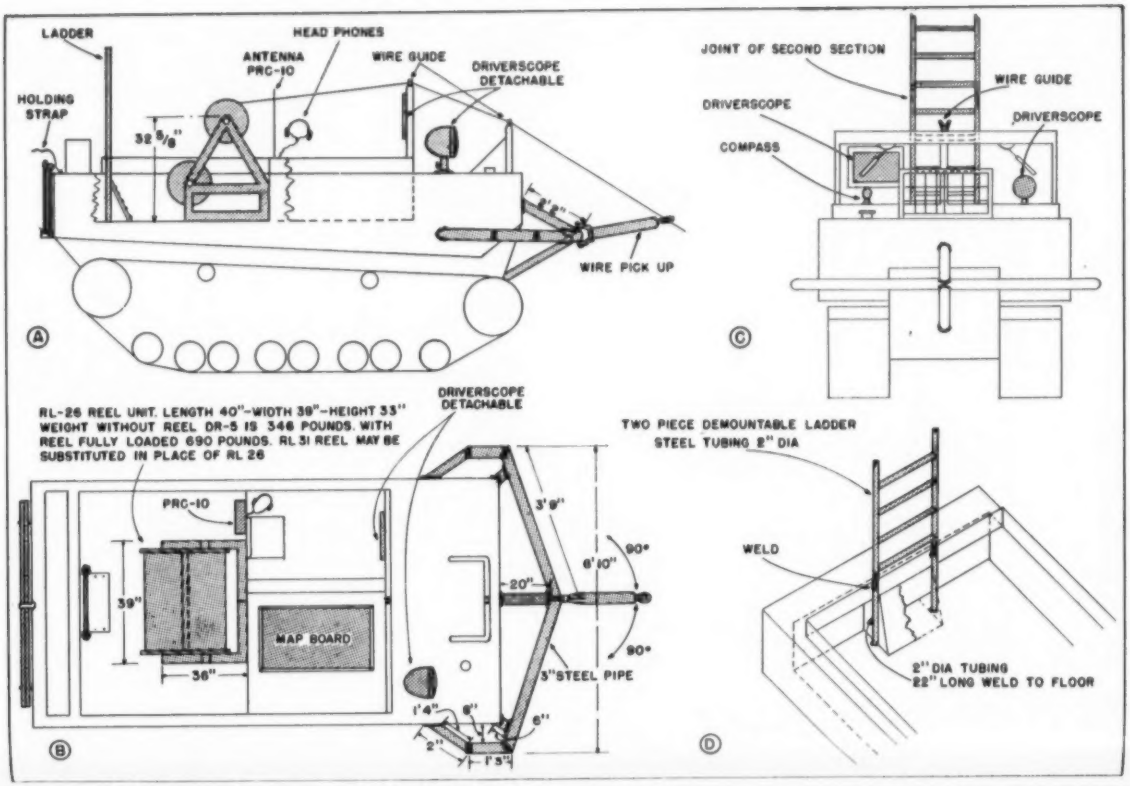
Even though more reliable than radio, wire lines are difficult to keep open. During one particular operation our regiment laid 90 miles of wire in just three days — yet none of our major elements moved. Most of that 90 miles was replacement of wire already installed but which had been torn up later by elements of the regiment and supporting arms.

The question which frequently confronts a Commo is "How can I prevent most of this mass destruction within our front line units and still remain practical?"

Laying wire by plane away from the roads and trails where traffic can cut it up has its advantages and may some day become practical. But at the present we can't quite divorce ourselves from the need of the human element in putting the wire exactly where we need it.

Our present system is to lay wire by wheeled vehicle along our main routes of advance, and this is the place where most of our trouble originates; a vehicle or individual inevitably gets entangled in the wire and breaks it. If we could get away from the main roads, even to a small degree, we would have solved a great many of our problems before they have had a chance to develop.

Let's take a simple example of a regiment supporting its battalions. Normally, the wire team begins, perhaps completes, laying wire to the designated future battalion location to insure communication upon occupation. Once the battalions have assumed a new position, the supporting elements then pick a position somewhere between the regimental CP and the battalion which they are going to support. Often times these supporting elements will occupy a po-


LADDER
HEAD PHONES
ANTENNA PRC-10
WIRE GUIDE
DRIVERSCOPE DETACHABLE
HOLDING STRAP
32 5/8"
WIRE PICK UP
A
JOINT OF SECOND SECTION
WIRE GUIDE
DRIVERSCOPE
DRIVERSCOPE
COMPASS
C
RL-26 REEL UNIT. LENGTH 40"-WIDTH 39"-HEIGHT 33" WEIGHT WITHOUT REEL DR-5 IS 348 POUNDS. WITH REEL FULLY LOADED 690 POUNDS. RL 31 REEL MAY BE SUBSTITUTED IN PLACE OF RL 26
DRIVERSCOPE DETACHABLE
PRC-10
39"
36"
MAP BOARD
3'9"
6'10"
90°
20"
90°
3" STEEL PIPE
1'4"
6"
6"
2"
1'3"
B
TWO PIECE DEMOUNTABLE LADDER STEEL TUBING 2" DIA
WELD
2" DIA TUBING 22" LONG WELD TO FLOOR
D

sition in the dark, damage the wire lines, cut communication, and the already overworked wire team will have to locate and repair the line.

There is a solution for this problem — a special wire-laying vehicle adapted for traveling cross-country. Use it to lay wire *away from roads.*

Some of the advantages in a vehicle of this type would be:

1. Economy of wire and personnel. Once the wire has been installed cross-country away from roads, the possibility of having to replace it has been lessened considerably. As for personnel, three men can satisfactorily operate such a vehicle compared to our present team of four to six.

2. Special equipment installed on the vehicle would enable our crew to function more efficiently in time and labor.

3. Since it is time-saving, more time could be spent in maintenance of equipment than is possible under combat conditions today.

One disadvantage, compared with our present system, may be that initial installation cross-country would take a little longer than present procedures require.

Vehicle requirements? They're not difficult.

In some instances the Army "weasel" possesses the desired qualifications since it can travel over snow, ice, water and marshlands. However, in wooded or rocky terrain the track is too delicate, and, too, the weasel was not built to carry communications equipment.

Let's say then, we need a vehicle very similar to the weasel but with a stronger track assembly and other minor modifications, such as:

1. *Addition of Reel Unit* RL-26. This is a motor driven unit and would relieve the wire crew of considerable work as well as being a time saver in retrieving wire. In the absence of the RL-26, the hand operated RL-31 (A-Frame) could be substituted. A and B, Figure 1, show such an addition to the present weasel.

2. *A detachable ladder.* (See A, C, and D, Figure 1.) A ladder would facilitate overhead wire installation up to 18 feet and by permitting installation on the sides of buildings, be a great help in villages where there is an absence of poles and trees. This ladder could be used mounted on the vehicle or detached and used separately. When not in use there is a rack provided for it on the rear of the wiremobile.

3. *A ditch digging device* (not shown). This addition should be placed on the rear of the vehicle and designed for the dual purpose of laying the wire underground and covering it.

4. *A compass and map board,* to assist the driver in navigation.

5. *A driverscope.* In other words, a snooperscope for vehicular use in limited night operations. It should be removable to protect it when not in use and to permit vehicle repair. Each crew member would be equipped with infra red-sensitive seeing aids — metascopes.

6. *Installation of Radio AN/PRC-10,* to assist the communication officer maintaining control and obtaining a more flexible system.

7. *A wire pick-up device* (See A and B, Figure 1). Installation of this device would enable the driver to regulate his speed according to the slack in the wire, letting the motor driven RL-26 do the work.

8. *Four Reels, DR-5,* could be carried on the sides of the wiremobile making a total of six reels available. The wire dispenser may also be used.

This type of vehicle would be best suited for installing communications on the regimental level where wire is essential to the regimental commander's control over his battalions. The Infantry regiment would require a minimum of four wiremobiles — one for laying wire to each battalion and one for reaching special units.

To communication personnel, a vehicle of this type would be invaluable, particularly in the desert and in flat and cold countries.

What do you think about it?

***FIGURE THIS ONE OUT:** You are commanding a company-size task force on a pursuit mission. Your column consists of a section of tanks, jeeps, and 2½-ton trucks carrying your company and its attachments. Your mission is to "GET ON THE ROAD AND GET MOVING!"*

About five miles from your starting point, you are stopped by this crater. You have a long way to go before sundown — what are you going to do? For the solution, read "Pursuit!" beginning on page 94.

WOODEN WORKING MODEL – THE PISTOL

By MAJ FREDERICK H. BLACK, JR., Infantry
and WOJG COATS BROWN

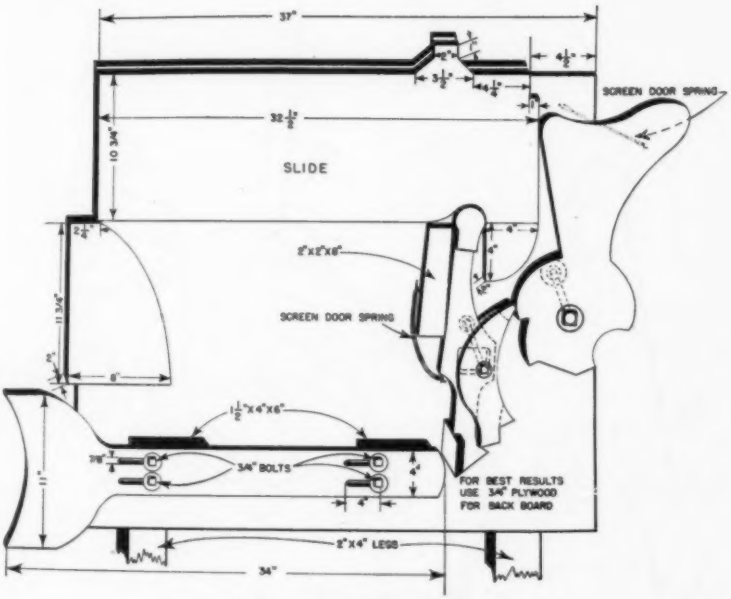


Figure 1. Drawing of pistol working model.

Teach weapons functioning with wooden working models and you take the mystery out of the subject.

Thousands of students at The Infantry School started on the road to expert knowledge of small arms through observing wooden working models of the weapons.

A working model of the pistol is covered in this article.

Detailed dimensional drawings will help you construct the model. It is built to a scale that makes it large enough for use with classes up to 200 students. (See Figure 1.)

When you build a working model, it will be more effective if:

(1) Each part is painted a distinctive color. For easy differentiation, paint adjacent parts in con-

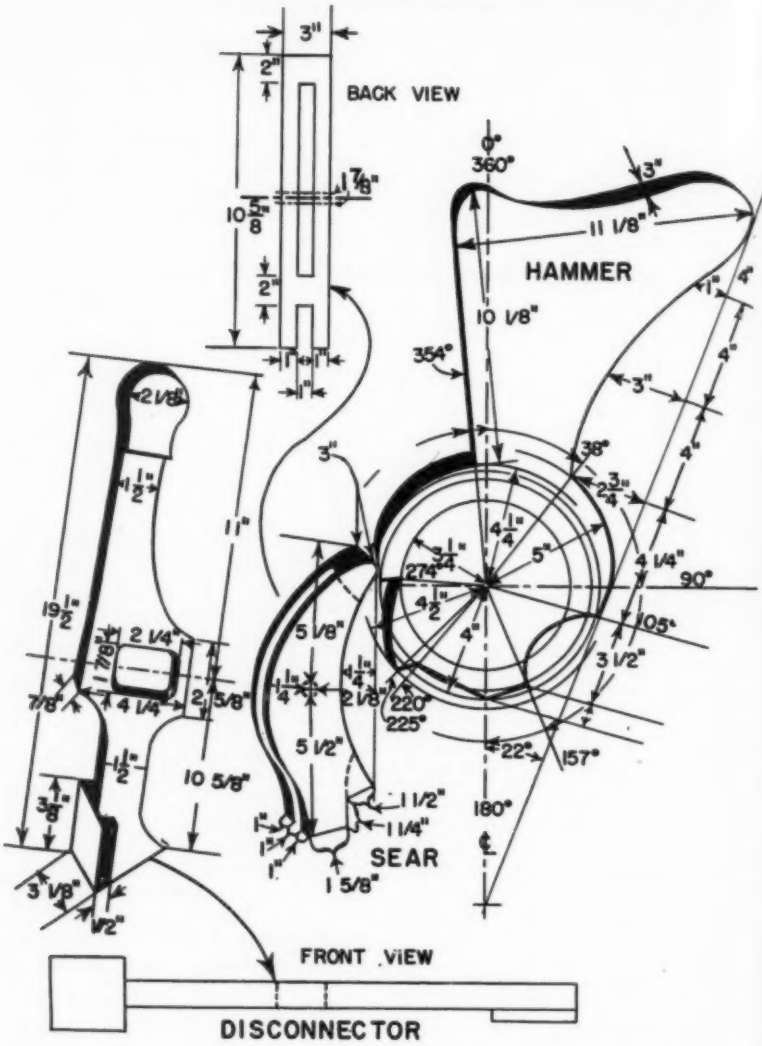


Figure 2. Detailed drawings for construction of pistol model hammer, disconnector, and sear.

trasting colors.

(2) The model is constructed accurately and to scale.

(3) Hardwood, such as oak or maple, is used for those parts subjected to strain.

(4) Screws instead of nails are used in assembling the model. (Nails can be used in constructing the model stand and backboard.)

The working model is not constructed exactly as the parts it represents. For simplicity of construction, some parts and details are eliminated. However, nothing essential to a complete understanding of functioning is missing.

The pistol working model is much simpler than that portion of the weapon the model represents. (See Figures 1 and 2.) It is used to illustrate a portion of the functioning and two of the four pistol safety devices. Some of the pistol parts which are involved in the functioning but not shown on the model are:

(1) The barrel.

(2) The recoil spring.

(3) The parts located inside the pistol grip (seldom mentioned except in a detailed discussion of functioning).

The only moving parts included on the pistol working model are the slide, trigger, sear, disconnector, and hammer.

The following materials are required to construct the pistol model:

2 — screen door springs
6 — ¾"x6" bolts
12 — ¾" washers
1 — plywood 1"x4'x8'
1 — 2"x12"x8' (pine)
1 — 1"x12"x12' (pine)
3 — 2"x4"x12' (pine)
½ lb — 8 penny finishing nails
½ lb — 10 penny common nails

When using the pistol model during instruction on functioning, first orient the class on the color scheme. Start the instruction on functioning by assuming a cartridge has just been fired. The model is used to show the following steps of functioning:

(1) Movement of the slide to the rear.

(2) Forcing the disconnector down.

(3) Cocking the hammer.

(4) Forward movement of the slide.

(5) Raising the disconnector.

(6) Action of the disconnector, sear, and hammer when the trigger is squeezed.

Allow the class to follow the instruction on their weapons which have been disassembled prior to the discussion.

The slide and trigger are operated manually. On the model the disconnector is forced down by the rearward movement of the slide and is raised by a spring located on the rear of the model. On the model the hammer is cocked by the slide during the rearward movement; the forward movement of the hammer is spring actuated. On the model, as on the pistol, the disconnector transmits the trigger movement to the sear causing the sear to pivot. The sear is repositioned by a spring located on the back of the model.

Instruction on safety devices follows instruction on functioning. The pistol model may be used to show the following safety devices:

(1) The half-cock notch.

(2) The safety device involving the disconnector and the slide.

To illustrate the action of the half-cock notch, draw the hammer back and engage its deep, undercut notch, which represents the half-cock notch, with the sear nose. Using the model, explain and demonstrate why the pistol cannot fire. This safety can be further demonstrated by drawing the hammer on the model almost back to the full cock position and then allowing it to snap forward. The sear nose engages the half-cock notch preventing the hammer from striking the firing pin.

To demonstrate the safety device involving the disconnector and slide, move the slide to the rear, cocking the hammer. Now move the slide part way forward. Point out that the disconnector nose does not move up into the notch in the underside of the slide because the slide has not moved completely forward. Therefore, when the trigger is squeezed, the lower portion of the disconnector passes under the sear and the sear remains stationary. The hammer does not move and the pistol does not fire. When you move the slide all the way forward, the disconnector nose moves up (spring activated) into its recess on the slide. Now when the trigger is squeezed (manually), the disconnector contacts the sear and the hammer snaps forward.

In using the pistol working model remember that a training aid is no better than its user — the instructor. Therefore, prepare yourself. Rehearse using the working model and this training aid will serve its purpose of assisting you in teaching.

No study is possible on the battlefield; one simply does what one knows. Therefore, in order to do even a little, one has already to know a great deal and know it well.

Marshal Foch

DEFENSE OF REAR AREAS

Part II

By LT COL HAROLD B. MANGOLD, Infantry

In the April QUARTERLY, Lt Col Karlton Warmbrod discussed defense of rear areas. In his illustrative problem he limited his requirements and the solutions to those applicable to the front line infantry battalion. He stated in his general discussion that "Protecting the division rear area against airborne, infiltration and guerilla attack is a much greater problem than protecting the battle position." He further stated that "The division reserve in addition to its normal missions may also be charged with protecting the division rear area. . . ."

In the illustrative problem that follows we will discuss some of the measures necessary to protect the division rear area against airborne, infiltration, and guerilla attack.

Referring again to Lt Col Warmbrod's article in the April QUARTERLY, you will recall that in his summary he stated "Defense against airborne, infiltration and guerilla attack requires observation and warning to off-set the attacker's advantage of surprise. All units, no matter where they are located, must provide their own initial security and protection. Once the attacking forces are located, we should have a mobile force immediately available and capable of moving to destroy them."

ILLUSTRATIVE PROBLEM

1. GENERAL SITUATION: The 4th Infantry Division, part of a larger force, has been ordered to assume the defensive, pending a buildup of forces within the Army area.

2. SPECIAL SITUATION: a. At 270800 September Commanding General 4th Infantry Division issued his defense order at RETO. For disposition of units see sketch map, pages 56 and 57.

b. Pertinent extracts of the division order were as follows:

(1) **a.** Aggressor has the capability of employing one airborne division anywhere in our zone. Intel Annex (issued later)

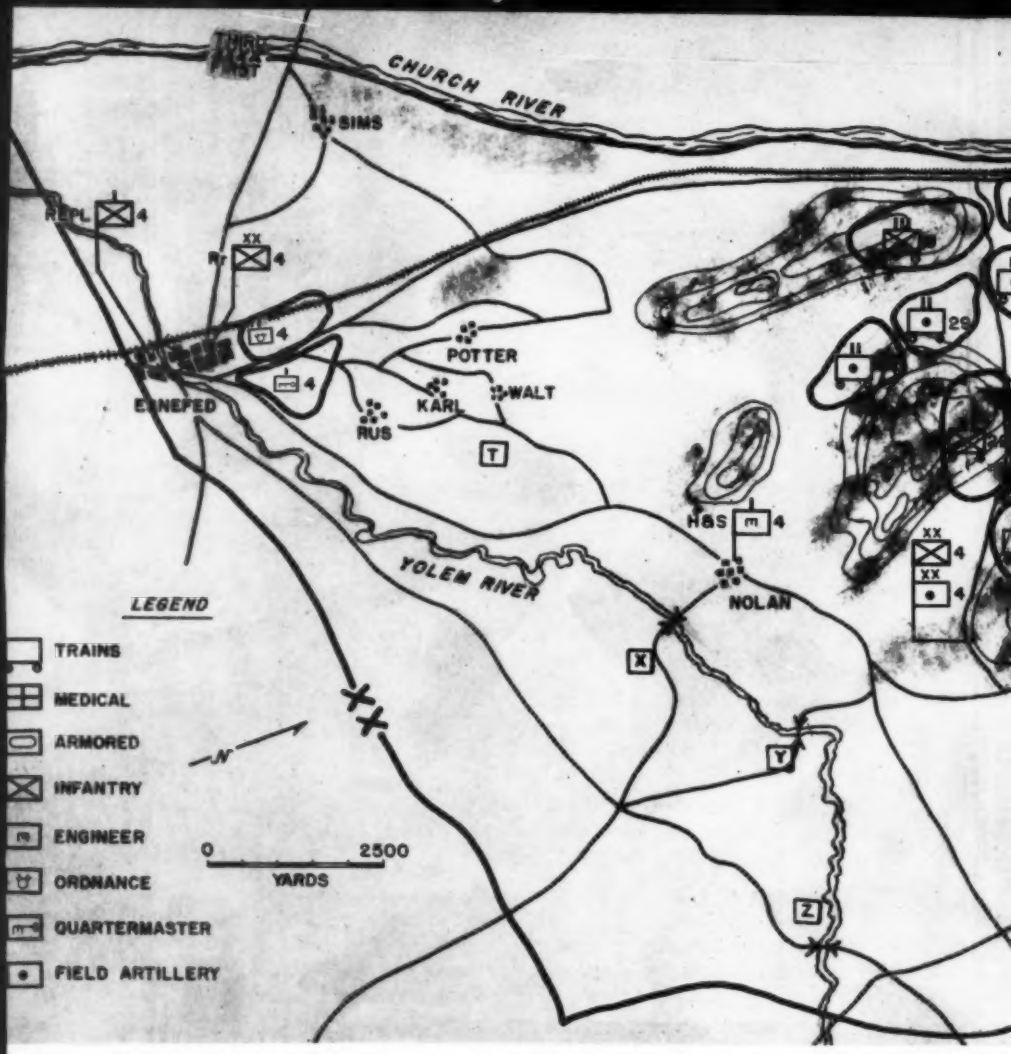
b. (1) 5th FA Gp reinf fires 4th Inf Div Arty with 2 bns (155 How).

(2) 4th Inf Div organizes, occupies and defends without delay CHURCH river line from junction CHURCH-AVERY Rivers to DOLA. (Approximately 2,000 yards north off sketch map)

(3) **a.** 8th Inf:

Atch: Co A 4th Tk Bn (M)

b. 12th Inf:



c. Div Arty:
   (1) *****

d. 4th Tk Bn:
   (1) Co A atch to 8th Inf
   (2) Bn (-) atch to 22nd Inf

e. 4th Recon Co: Atch to 22nd Inf for protection of Div rear area.

f. 4th Eng Bn:
   (1) *****

x. Div Res:
   (1) 22d Inf:

(a) Prepare psn A, B, C, D. Priority A, B, D, C. Occupy psn D with one bn

(b) Be prep to execute catk plan A, B, C on order

(c) Be prep to assemble vic of present assembly area on 2 hr notice

(d) Protect Div rear area

(2) Catk Plans (omitted)

x. 22nd Inf integrate administrative and service units located in the division rear area in defense plan for protection of division rear area.

(4) Admin O. (to be issued)

(5) ***** ***** *****

3. FIRST REQUIREMENT: You are Colonel 22d Infantry. What are your decisions as pertains to the items listed below in accomplishing the defense of the division rear area:

a. The most likely airborne objectives in the division rear area?

b. The most likely airborne landing areas?

c. The establishment of a warning system? If so, how will it be established? Will you supplement the warning system with a patrol system? If so, what units or installations will furnish the patrols?

d. Positions to be organized (other than those indicated in the division order) by the regiment and its attached units, and/or other units and installations located in the division rear area? (NOTE: For the purpose of the problem assume all units and installations have established local security for their respective areas.)

e. Organization and composition of a mobile striking force.

4. SOLUTION AND DISCUSSION FIRST REQUIREMENT:

a. **Solution, a:** Critical terrain feature running generally northeast from Point V to Point W, ESNEFED, bridges over the YOLEM River, YORICK, NOLAN, and lines of communication.

b. **Discussion, a:** One of tne first considerations of Colonel 22d Infantry in planning the defense of the division rear area is to determine the likely airborne objectives. Once the probable objectives have been determined, he can intelligently plan his defense. To determine the probable airborne objectives, consideration must be given to the following: (1) The capabilities of the Aggressor airborne force. (2) Types of airborne operations that are most likely to be conducted against his area of responsibility. (3) The critical terrain and routes of communication within the area of responsibility.

After considering these factors, Colonel 22d Infantry concluded that Aggressor could employ either the raid or link-up type airborne operation against the division rear area. He eliminated the independent airborne operation since this type airborne operation normally strikes deep in the defender's territory. From a study of terrain and routes of communications Colonel 22d Infantry determined the most likely airborne objectives were, the critical terrain feature running generally northeast from Point V to Point W, and the communication center of ESNEFED. There are numerous other secondary airborne objectives in the area such as the bridges over the YOLEM River, YORICK, NOLAN, MSR, and the lines of communications. In all probability Colonel 22d Infantry could have obtained much of this information from the Division G2 who would have made a study of the enemy capabilities and the terrain. He should, in any case, check with G2 concerning the probable airborne objectives.

c. **Solution, b:** Suitable airborne landing areas are found in the northwest, and east, and southern portions of the division rear area.

d. **Discussion, b:** For planning purposes in an airborne operation, an area of approximately 1000

yards square is used in selecting landing areas for a battalion landing team. However, it has been demonstrated that a battalion can drop effectively in a much smaller area. Sufficient landing areas exist adjacent to, or close to the airborne objectives, to land an airborne force of sufficient size to capture them. Colonel 22d Infantry would require that plans be prepared to counterattack Aggressor forces landing adjacent to the critical airborne objectives.

e. **Solution, c:** Yes — The system will be accomplished by the establishment of a series of OP's located throughout the division rear area. It should be supplemented by patrols, especially during darkness or periods of poor visibility. The patrols will be provided by the regiment and attached units.

f. **Discussion, c:** It will be necessary to establish a local warning system to provide timely warning against airborne, infiltration and guerilla attacks. Each unit and installation in the division rear area is responsible for its own local security. To provide this local security, each unit or installation must, of necessity, establish its own OP's to provide warning. Colonel 22d Infantry in this case, would have each unit and installation in the division rear area submit to him an overlay showing the observation and security that has been established for their respective areas. From this information, Colonel 22d Infantry can readily determine the additional OP's which must be established to provide timely warning against airborne, infiltration and guerilla forces. The additional OP's normally will be established by units of the regiment or its attached units. In some cases, Colonel 22d Infantry may recommend that additional OP's be established by units or installations located in the division rear area.

In addition to the local warning system, early warning against a probable airborne attack will be obtained through reports from higher headquarters. This information would be furnished by airforce intelligence, the antiaircraft warning system, and by special intelligence agencies.

The local warning system should be supplemented by patrols as it would require too many troops to establish OP's to provide visual coverage of the entire division rear area. A system of patrols should be set up to cover the areas which are not critical to the defense of the division rear area. Also, during periods of reduced visibility, it may be necessary to supplement OP's in the critical area by patrols. The patrols will be provided by the regiment and its attached units. The administrative and service units in the division rear area normally will not have sufficient personnel to perform this job and accomplish their primary mission.

g. **Solution, d:** The Division Replacement, Quartermaster, and Ordnance Companies and Division Rear to prepare positions to protect ESNEFED and the bridges over the YOLEM River just south and east thereof. The Division Reconnaissance Company to prepare positions to protect bridges located at X, Y, and Z.

h. **Discussion, d:** From a study of the enemy capabilities and the terrain in the division rear area, Colonel 22d Infantry determined the following:

(1) That ESNEFED and the bridges over the YOLEM River are likely airborne objectives.

(2) That ESNEFED, a key communication center, if seized by an enemy force would seriously affect the division's ability to defend its assigned sector.

(3) That the capture or destruction of the bridges over the YOLEM River would seriously affect the division's ability to defend its assigned sector.

(4) That harassing attacks by Aggressor airborne, infiltration, or guerilla forces against supply vehicles using the MSR could seriously affect the division's ability to defend its assigned sector.

(5) That ESNEFED and the bridges over the YOLEM River are all located in the rear portion of the division rear area. That the regiment would have to move approximately seven miles to engage an enemy force attacking the farthest of those installations.

(6) That positions must be prepared to defend ESNEFED and the bridges over the YOLEM River to prevent their capture or destruction.

(7) That a unit (or units) must be designated to occupy the prepared positions in case of an attack to prevent their capture or destruction prior to the arrival of the regiment or elements thereof.

(8) That protection must be provided the MSR.

(9) That sufficient security is provided to protect the other likely airborne objectives in the division rear area.

Colonel 22d Infantry in determining what force or forces should accomplish the defense of ESNEFED, the bridges over the YOLEM River, and provide protection for the division MSR, considered all missions assigned the regiment and forces available to accomplish these missions. To accomplish all of the missions assigned his regiment, Colonel 22d Infantry determined that he could not utilize elements of his regiment or the attached tank battalion to prepare the defenses of ESNEFED and the bridges over the YOLEM River, and that these defenses and the protection of the MSR could best be accomplished by:

(1) Assigning the Division Reconnaissance Company the mission of protecting the bridges over the YOLEM River and providing protection for the MSR. In addition to the above missions, the reconnaissance company was assigned patrol and OP responsibility for that portion of the division rear area north of the YOLEM River and west of the MSR.

(2) Assigning the Quartermaster Company, Ordnance Company, Replacement Company, and division rear the mission of preparing the defense of ESNEFED and the bridges over the YOLEM River just south and east thereof. These units will be prepared to occupy and defend ESNEFED and the bridges just south and east thereof in case of attack by Aggressor. The Replacement Company commander is given the responsibility of coordinating the defense.

i. **Solution, e:** Yes — 4th Tank Battalion (-) and one infantry battalion, under command of CO Tank Battalion.

j. **Discussion, e:** Colonel 22d Infantry to accomplish all of his missions cannot afford to dissipate his forces to protect all likely areas of

attack. In addition, Aggressor has the capability of employing his airborne forces at the place and time of his choosing. Therefore, the regiment and its attached units must be capable of meeting an Aggressor force any place in the division rear area. This can best be accomplished by a mobile striking force strong in armor and fire power. The division Tank Battalion (-) and an infantry battalion provide a combined arms team strong in armor, fire power, and shock action, all desirable characteristics for a force employed to destroy airborne, infiltration or guerilla forces. All of this force will be motorized and prepared for immediate employment.

5. SITUATION CONTINUED: As Colonel 22d Infantry continues preparation of his plans for the defense of the division rear area, he realizes there are many problems which will require coordination. He also realizes that additional information, other than that contained in the division order, will be necessary to complete his plans and coordinate the defense of the division rear area.

6. SECOND REQUIREMENT: a. Listed below are several items on which Colonel 22d Infantry may or may not desire additional information to complete his plans. As Colonel 22d Infantry, determine those items on which you would desire additional information to complete your plans. Where or from whom would you obtain the required information?

(1) Counter - intelligence measures?

(2) Disposition of OP's and patrols established by the 8th and 12th Infantry Regiments?

(3) Location of traffic control posts in the division rear area?

(4) Measures for handling prisoners, captured documents and materiel?

(5) Probability of infiltration and guerilla attacks?

(6) Artillery support that can be expected in the defense of the division rear area?

b. Outline your communication system to provide timely warning and control against airborne, infiltration or guerilla attacks. (Assume that the division signal officer can furnish only telephone wire, and normal wire and radio teams used to work in division command net.)

c. **Solution, a (1):** Additional information desired — Information may be obtained from the Intelligence Annex, the division G2, and G1.

d. **Discussion, a (1):** Colonel 22d Infantry to complete and coordinate his plans for the defense of the division rear area should know what counter-intelligence measures are to be in effect during this operation. Also, he would endeavor to determine what plans are made concerning civil affairs — military government — in regard to control of and assistance to the civilian population in the area. Those measures pertaining to the control of civilians, refugees, displaced persons, and suspected enemy agents are of particular importance since infiltration and guerilla tactics are dependent to a great degree on the cooperation and help received from the civilian population. Both or either of these types of attack employed in conjuction with a main ground attack could seriously affect the division's ability to accomplish

its mission. Therefore, those measures planned to utilize military government teams available from higher headquarters and those additional measures that will be implemented to control and regulate the civilian activities to insure enforcement of strict civil security measures that will affect the enemy's ability to effectively employ these types of attack are of concern to Colonel 22d Infantry. This information would be obtained from the division G1.

Normally, all of the information pertaining to counter-intelligence, i.e., CIC, propaganda, psychological warfare, etc., needed by Colonel 22d Infantry to complete his plans would be obtained from the Intelligence Annex to the division order. If additional information is desired, it would be obtained from the division G2.

e. **Solution, a (2):** Additional information required — Information should be obtained from the 8th and 12th Infantry Regiments.

f. **Discussion, a (2):** To complete his plans for the defense of the division rear area Colonel 22d Infantry certainly would not need detailed information concerning all observation posts and patrols established by the 8th and 12th Infantry Regiments. However, the observation posts and patrol systems established by all three regiments should be coordinated between areas of responsibility. This is necessary to insure all areas are adequately covered, and to prevent any overlapping or duplication of effort since all have a major job to accomplish. Observation posts and patrols would effectively be tied in by coordinating with the 8th and 12th Infantry Regiments.

g. **Solution, a (3):** Additional information desired — Information obtained from the Division Traffic Control Plan.

h. **Discussion, a (3):** To adequately coordinate the defense of the division rear area Colonel 22d Infantry must know the location of all units and installations within his area of responsibility. The traffic control posts located in critical areas, especially in cities and towns will provide considerable assistance through the control of traffic (military as well as civilian) if the division rear area is subject to a serious attack by airborne, infiltration, or guerilla forces. Traffic control posts may also provide valuable information concerning suspicious acts or movements of civilians. Colonel 22d Infantry would obtain the location of the traffic control posts from the traffic control plan prepared by division G4. Integration of the control posts in the defense plan for the division rear area would be accomplished by coordinating with the division Provost Marshal.

i. **Solution, a (4):** No additional information desired.

j. **Discussion, a (4):** Colonel 22d Infantry would be aware of the procedures for handling captured prisoners, documents, and material. These measures are normally SOP and are not normally changed from one operation to another.

k. **Solution, a (5):** Additional information desired — Information could be obtained from the division G2.

l. **Discussion, a (5):** Certainly Colonel 22d Infantry would desire all information available concerning the probability of attacks by infiltration or guerilla forces. With

all available information Colonel 22d Infantry can more intelligently plan and coordinate the defense of the division rear area. Division G2 from his own estimate of the situation or from intelligence reports from higher headquarters should be able to provide this information.

m. **Solution, a (6):** Additional information desired — Information obtained through the artillery liaison officer or artillery commander of the normal support artillery battalion.

n. **Discussion, a (6):** To complete his plans Colonel 22d Infantry must know what artillery fires he can expect in case of a major airborne attack against the division rear area. This information would be obtained through his normal support artillery liaison officer who will be available although the normal support artillery battalion is in general support of the division. Airborne troops are particularly vulnerable to concentrated artillery fires during and immediately after landing. Colonel 22d Infantry would certainly require artillery fires planned on likely landing areas adjacent to the critical airborne objectives, and fires to support a counter-attack in these areas.

Solution, b: See discussion below.

Discussion, b: Assuming that the division Signal Officer cannot furnish any additional equipment or personnel to the CO 22d Infantry other than additional telephone wire, and the normal wire and radio teams used to work in the division command net, a type of communication system that could be employed by the CO 22d Infantry to provide timely warning and control against airborne, infiltration or guerilla attacks is as follows:

WIRE:

Two lines should be installed between the following installations:

Division CP and the 22d Infantry CP.

22d Infantry CP and 1st Battalion 22d Infantry CP.

22d Infantry CP and the 2d Battalion 22d Infantry CP.

22d Infantry CP and the 3d Battalion 22d Infantry CP.

Three lines between the 22d Infantry CP and a switchboard belonging to the Regimental Communication Platoon of the 22d Infantry, operated by personnel from the 22d Infantry Regimental Communication Platoon, located in the vicinity of the division CP. This switchboard would be considered a switching central for the 22d Infantry regimental wire warning net and would be either an SB-22 or a BD-72 consisting of 12 drops or units capable of 12 wire circuits without partying.

Two lines should be installed between the 22d Infantry switching central located in the vicinity of the division CP and the following points or locations:

Service Company, 22d Infantry.

Town of ESNEFED.

Town of NOLAN or Headquarters and Service Company, 4th Engineers.

One line between 22d Infantry switching central and the 42 Field Artillery Battalion trains area and the 96th Field Artillery Battalion trains area.

Service Company of the 22d Infantry would have a switchboard SB-22 or BD-72, (organic equip-

ment) and would serve as a switching central for the trains' area consisting of the 22d Infantry, 4th Medical Battalion, 20th Field Artillery Battalion, 8th Infantry, the 29th Field Artillery Battalion, 44th Field Artillery Battalion and the assembly area of the 4th Tank Battalion (-) with one wire line running from each of these units to the 22nd Infantry Service Company switchboard.

In the town of ESNEFED and in the town of NOLAN a switchboard SB-22 or BD-72 would be installed to operate and serve as a switching central. The regimental communication platoon would furnish switchboard and communication personnel for the switching central at ESNEFED. Headquarters and Service Co., 4th Engineers, would furnish the switchboard and communication personnel for the switching central at NOLAN.

The division service units in the vicinity of ESNEFED would be connected to the switching central in this town with one line to each service unit.

Each OP that is established would be connected by wire to the nearest wire head, with switchboard, that leads directly to one of the switching centrals noted above. As an example: Assuming that the 8th Infantry Service Company established an OP, this OP would have a telephone connected to a switchboard in the 8th Infantry Service Company area. The 8th Infantry Service Company switchboard would be connected with the 22d Infantry Service Company switchboard or switching central by one wire line. The 22d Infantry Service Company switching central would be connected to the 22d Infantry switching central in the vicinity of the division CP with two lines and from this point three lines would run to the 22d Infantry CP proper.

While this type of wire warning net may seem somewhat elaborate it is felt that such an independent wire system available to the CO 22d Infantry is much more desirable than to try to rely upon normal wire circuits terminating in the division CP from all other units in the division. Moreover, the regimental communication officer of the 22d Infantry will not only have available his own regimental communication platoon to install this wire warning system, but in addition he will be able to use the normal division wire team that is attached to him from the division signal company. He will also have available to him the communication platoons from the two battalions, 22d Infantry, located in assembly areas in the vicinity of the regimental CP and the communication personnel from Heavy Mortar Company 22d Infantry.

RADIO:

A radio warning net in addition to the 22d Infantry's normal AM and FM command nets:

The equipment used in this regimental warning net would consist of AM radios. The frequency used by the regimental I & R Platoon could be employed for the regimental warning net if the division signal officer is unable to supply an additional frequency. The following units would be in this warning net using the following radios:

One AN/GRC-9 radio would be located in the 22d Infantry CP. One at the communication center

at NOLAN furnished and operated by Headquarters and Service Company of the 4th Engineers. An SCR 506 at the communication center in ESNEFED furnished and operated by the Reconnaissance Company. An AN/GRC-9 in the communication center at the 22d Infantry Service Company and one AN/-GRC-9 at the 8th Infantry Service Company, both of these last two mentioned radios to be furnished by Regimental Headquarters Company of the 22d Infantry, thereby permitting the organic AN/GRC-9 radio in each service company to operate in their respective regimental special purpose nets for use of the regimental S4.

At each of the AN/GRC-9 radio sites noted above an AN/PRC-10 radio could be located which would be in contact with surrounding OP sites which would have AN/PRC-10's. There would, however, be an exception for those AN/GRC-9 sites at the 8th Infantry and 22d Infantry Service Company areas. At these two service company sites, which are surrounded by field artillery battalion service batteries, an AN/PRC-9 radio would be located and surrounding OP's would contain an AN/-PRC-9 radio. These AN/PRC-9 radios would come, not from the respective service batteries, but from the headquarters and firing batteries of each field artillery battalion. A total of six AN/PRC-9's per each artillery battalion could be made available.

The one AN/GRC-9 radio allotted to the 8th Infantry and 22d Infantry Service Companies would come from Regimental Headquarters Company, 22d Infantry as noted above. These sets are normally used by regimental liaison officers.

The AN/PRC-10 radios used for OP's pose the problem of where they will come from. Since it is believed that the organic AN/PRC-10's for each of the three battalions of the 22d Infantry should be left intact and not touched for OP duty, some other unit within the 22d Infantry should furnish the necessary sets. The following AN/PRC-10's could be used without affecting the several missions of the 22d Infantry:

10 AN/PRC-10's from the counter fire platoon, using members of the platoon to operate the sets.

4 AN/PRC-10's from the I & R Platoon. Each squad and platoon headquarters of the I & R Platoon has an AN/GRC-9 radio which will operate in the regimental AM warning net.

2 AN/PRC-10's used as utility sets in regimental headquarters for regimental staff officers in contacting and entering organic battalion command nets.

The above breakdown gives 16 AN/PRC-10 radios for use at OP's. If more are needed then the following sources could be tapped: Two AN/PRC-10 utility sets in the heavy mortar company; two AN/-PRC-10 utility sets in each battalion headquarters company, thus giving eight additional AN/PRC-10's.

In the event any OP is too far distant from an AN/GRC-9 radio site used in the regimental AM warning set, an AN/GRC-9 radio could be set up at the OP and work directly in the warning net. Three AN/GRC-9 radios would be available from regimental headquarters

company in addition to the two sets already placed at the service companies of the 8th and 22d Infantry Regiments. A fourth AN/GRC-9 could be obtained from the heavy mortar company of the regiment.

The 4th Tank Battalion and the Reconnaissance Company would be netted in the 22d Infantry normal FM-tank command net consisting of the regimental CP and the Tank Company, 22d Infantry. The organic AN/GRC-7 of each unit would be used for this net.

Roving patrols consisting of the regimental I & R platoon can maintain contact in the radio AM warning net through their organic AN/GRC-9 radios. Patrols from the reconnaissance company or tank units can contact the 22d Infantry CP direct by AN/GRC-7 or SCR-510 radio in the regimental tank command net. Any patrol can of course stop at any OP or switching central and make their report by wire or by utilizing the AM radio warning net.

MESSENGER AND VISUAL:

In the event wire and radio communication failed, motor messenger and visual signals, such as pyrotechnics and smoke grenades could be used.

Pyrotechnics could well be used even to supplement wire or radio in case of emergency.

7. SITUATION CONTINUED: By 281700 September all plans for the defense of the division rear area had been completed. By 290845 September the situation had developed as follows:

a. During the afternoon and night of 28 September small probing attacks of platoon and company size were conducted by Aggressor all along the division front.

b. At 290500 September Aggressor attacked in strength against positions occupied by the elements of the 8th and 12th Infantry Regiments.

c. At 290530 September an OP of the 12th Infantry trains located at **U** reported an Aggressor airborne drop of approximately company size 500 yards east of YORICK. Elements of the regimental mobile alert force and personnel of the 12th Infantry trains and the 96th Field Artillery trains destroyed this force except for approximately 15 Aggressors which dispersed in the wooded area. All rear area units and installations were notified of the action and of the Aggressor personnel dispersed in the area.

d. At 290830 September G3, 4th Division, notified Colonel 22d Infantry that Aggressor had overrun one company position in the 8th Infantry area. However, the battalion reserve company was limiting the penetration from prepared positions.

e. At 290835 September 42d Field Artillery Battalion trains reported four Aggressors killed and three captured near their area.

f. At 290840 September, the OP located at RUS reported an Aggressor airborne drop being made in the vicinity of KARL, POTTER, WALT. All units and installations in the division rear area were immediately alerted.

g. At 290850 September, the regimental S2 reported: "OP located at RUS reports the airborne drop as approximately battalion size. Force assembling in area in vicinity of **T**."

8. THIRD REQUIREMENT: As Colonel 22d Infantry, what are your actions and orders at this time?

9. SOLUTION AND DISCUS-

SION THIRD REQUIREMENT:

a. **Solution.** Colonel 22d Infantry's actions and orders were as follows:

(1) Ordered the division ordnance, quartermaster, replacement companies and division rear to defend ESNEFED and the bridges over the YOLEM River just south and east of ESNEFED.

(2) Ordered the regimental mobile alert force to counter-attack immediately to destroy the airborne force.

(3) Ordered the division reconnaissance company to defend bridges over the YOLEM River at **X, Y, Z.**

(4) Notified the division commander of the action taken to destroy the airborne force.

(5) Notified all units and installations of the latest developments and action being taken to destroy the airborne force.

b. **Discussion.** It is apparent from the latest information that the airborne forces objective is ESNEFED and/or the bridges over the YOLEM River. Once the objective or objectives of this force are determined aggressive action must be taken to destroy it. Therefore, Colonel 22d Infantry ordered the defense of ESNEFED and the bridges over the YOLEM River, and a counter-attack to destroy the force. ESNEFED and the bridges over the YOLEM River must be defended immediately to prevent their capture or destruction. The units located at ESNEFED and the division reconnaissance company prepared the defensive positions and have made plans to defend these installations in case of attack. No other enemy action at this time would prevent their accomplishment of this mission.

Although the outcome of the action in 8th Infantry's area is uncertain at this time, Colonel 22d Infantry should not let this situation influence his decision to counter-attack to destroy this force. The regimental mobile alert force, consisting of the division tank battalion (-) and an infantry battalion, with the units defending ESNEFED and the bridges over the YOLEM River is of sufficient strength to kill or capture the Aggressor airborne force.

The division commander should immediately be notified of the action taken to destroy the airborne force, and would be kept informed of all later developments. All other units and installations should be notified of the latest developments and should not be kept on the alert unnecessarily since they have other missions to accomplish.

COMBAT TIPS

In order that you may be kept informed of the latest and most useful tricks of the trade coming out of Korea, the *Quarterly* presents these COMBAT TIPS as a regular feature.

I

REPORT ON KOREA

By COL WILLIAM J. McCAFFREY, Infantry

The opinions expressed herein are the author's and do not necessarily represent current thought at the Infantry School. They were written following the author's return from Korea several months ago.

Korea hasn't brought forth any radical innovations in war such as the airplane, the tank, poison gas, or the atom bomb. It has been a conventional sort of war fought with conventional weapons. We beat the numerically greater Chinese manpower with a preponderance of machinery. When a mass of men and a mass of well operated machines tangled, flesh and blood proved to be the most fragile. We enjoy a technological superiority over the Chinese and North Korean Communists. We must continue to maintain and increase that superiority.

In my opinion the outstanding development in Korea is the magnificent performance of the United States Infantryman, especially the non-commissioned officers and junior officers. I salute them. Their courage and skill made up for any deficiencies that may have existed in other aspects of our operations.

The tactics that the Infantry School teaches are as sound as a 1939 dollar. Some of the officers we received as replacements who had been away from troops for a long period of time and had not received refresher training proved to be rusty. Even so, if you asked them, for example, what they learned about the attack of a fortified position in 1944 that might be useful in the reduction of log bunkers, they could come forth with ready and sensible answers. Therefore, I feel that the training at Benning was good not only from the standpoint of what was taught but also from the viewpoint of what was retained.

One idiosyncrasy I discovered among newly commissioned officers was that occasionally they did not connect the excellent training they received at OCS with what they were required to do on the battlefield. We emphasized in the indoctrination of our new officers that we would be very happy if they applied in Korea what they learned in Georgia and things perked up.

During the initial phases of the action in Korea I heard some talk about throwing away the books. Those were the gay days after the

breakout when we were pursuing a beaten enemy. When the going got rough after the Chinese intervention a lot of people dusted off a lot of field manuals and went back to "an approved solution." The results were electrifying. The same troops that had been hurled back in something less than good order turned around and chewed up the Communists unit by unit. We didn't search for a piece of terrain that

Figure 1. "We need to get rid of the smoke of our weapons. . . ."

matched that on which Problem I was staged at Benning but we certainly adapted Problem I to the hog backs and valleys of Korea. A great respect developed for the officers who really knew their stuff and budding young lieutenants and captains found themselves listened to with rapt interest if they had mastered their trade. This group of young officers will be a valuable pool of combat leadership for the American Army of the future.

I would like to pay a special tribute to the non-commissioned officer leadership. Many of these men were veterans of World War II. They knew their jobs and, perhaps more important, they had a keen sense of responsibility for the men entrusted to their care. The successes they achieved and the minor losses that were sustained by their units, considering the odds, were truly phenomenal. I believe every regimental commander in Korea will reiterate that he was proud to have served in the same outfit with them.

In tactics we have developed very little that is revolutionary. We have emphasized simplicity, the effective use of every weapon, and the maintenance of the most flexible control over our men and firepower that is possible. As for technique at the end of a year of constant campaigning involving attack, defense, delay, withdrawal, and retraining, the units of Eighth Army had reached a high level of efficiency.

One technique we never improved was the problem of concealing the smoke of our weapons. It will always remain a mystery to me why we continue to use powder that raises as much smoke and has as much muzzle flash as ours does. No doubt some ordnance officer will be able to give good excuses for what we have, but my answer is, "go back and try again." What we have now is not good enough.

A doctrine which I view with considerable misgiving is the present evolution of the fire support coordination center under the control of the field artillery. Too frequently division artillery would tell us we didn't want an air strike; what we wanted was a TOT or that interdiction fires were or weren't desirable. There can only be one officer at any level of command responsi-

ble for a portion of the front. Subject to the restrictions of his next higher headquarters he must control all that goes on in that area that will contribute to or detract from the accomplishment of his mission. We must insist on close physical and tactical contact between the FSCC and the regiment or division CP it supports. Too frequently now this contact depends on the personality or cooperation of the two commanders. The maneuvering of the fire of all weapons should be controlled ultimately in the operations office of the regiment or division.

The medical service has reached a high state of excellence. The use of the helicopter and mobile surgical hospitals has been developed so that the proportion of lives saved is unbelievable compared to previous standards. More can, and I'm sure will, be done to even further reduce the proportion of fatalities or permanent injuries.

In my opinion communications worked better in this war than in the last. The SCR 300 is still too heavy and the SCR 536 still is unreliable. However, the skill with which available communications were employed got the job done. The wire dispensers were efficient but, in my personal opinion, uneconomical. Some bright sergeant ought to devise a method of picking up the wire and putting it back in the reel for further use.

Figure 2. 155 self-propelled guns supporting Infantry positions in Korea.

I personally believe that radio within the squad would be helpful*. A receiver built into the helmet and a transmitter for the squad leader would permit control at the point where control is most difficult and essential. Undoubtedly the practical difficulties are great ent sound equipment is inadequate to the task and no doubt electronic methods are forthcoming. However, the mortar is a cheap weapon which is simple to operate and therefore suitable to a mass army; we must be prepared to counter it or we will suffer disproportionate losses.

Figure 3. "The HBT uniforms looked like they were purposely designed to give a man an inferiority complex. . . . The multiplicity of garments and uniforms is a marvel to behold."

and perhaps only a dozen helmets could be fixed up and allotted to each battalion. However, for special missions and patrols we could use the facility.

We could use some device to kill people at night which creates neither a flash nor an explosion. A blow gun or a slingshot might do the trick or maybe the old crossbow ought to be brought back.

We have a critical need for an instrument to pinpoint the locations of enemy mortars. The present sound equipment is inadequate to the task and no doubt electronic methods are forthcoming. However, the mortar is a cheap weapon which is simple to operate and therefore suitable to a mass army; we must be prepared to counter it or we will suffer disproportionate losses.

Napalm ought to be packaged for delivery by the Infantry or artillery. We now depend on the air for its employment. Due to weather and other limitations, we can't depend on the air to put it where we want it when we need it. The flame thrower is one answer if it were lightened and constructed so that additional tanks could be inserted on the battlefield. Perhaps a Field Force Board can wrestle with that one.

For years now we have been

*The idea of a squad radio has been considered at the Infantry School. However, current thought is that its disadvantages outweigh the advantages.

wedded to the philosophy that there is nothing like a good old cal. .30 rifle capable of killing at a distance and I quite agree (with a little moderation). We also need a weapon that can deliver a heavy volume of fire at close range. One weapon for both jobs won't do. We need a submachine gun both as a standard weapon in the squad and as special equipment for patrols and outposts. The German "Burp" gun was good. Let's start with it.

The HBT uniforms looked like they were purposely designed to give a man an inferiority complex. The winter clothing was too heavy. The multiplicity of garments and uniforms issued to the American soldier is a marvel to behold.

Give him a good looking cap at least and devise uniforms that don't have to fit in nine different directions. Let's adopt a sensible field uniform and a neat dress uniform and then let's stop changing. A soldier will be more apt to take pride in the uniform his father wore than in a new one.

Finally, no matter how great the mechanical skill or how ingeniously constructed are the weapons, it takes men with guts to operate them and leaders with wisdom and courage to lead them. We have plenty of both, thank God.

II

Infantry - Artillery - Armor - AAA Team Tactics. Since the CCF usually dig well-concealed defense positions just forward of or on the topographical crest of high hills (and occupy the reverse slope for protection), Infantry commanders have found this use of supporting fires to be effective:

a. Bring supporting fires to bear on the topographic crest initially, to blow away camouflage and locate the enemy positions.

b. Use white phosphorous against these dug-in positions (napalm rolls off steep open ridges).

c. Deliver short concentrations at 3-minute intervals with 4.2-inch and 81-mm mortars; or use short concentrations of artillery at more frequent intervals while the Infantry is attacking. Sustained concentrations do not appear to have the same effect as short concentrations at frequent intervals.

d. When supporting fires must be lifted, walk them in 50-yard brackets up and over the crest of the hill rather than cease fire.

e. Lay smoke on adjacent hills.

f. Use the M-16 quad 50 AA (or M-19 twin 40-mm) for close support fire when artillery is lifted.

g. Maneuver tanks to positions from which to cover reverse slopes of enemy positions; to fire on command posts and the alternate positions of the enemy if he attempts to shift; or to neutralize enemy machine guns located in adjacent areas.

h. Use bayonets and assault fire to close with the enemy. Each rifleman should be equipped with hand grenades.

Figure 4. One new defense against the Chinese Communist Forces at night is a 55-gallon drum filled with napalm, set off by a detonator attached to an 81-millimeter white phosphorus mortar round. M/Sgt. Karl Rettstatt, a member of Company "F," 19th Infantry, demonstrates how the detonator is set off by placing two bare wires in any battery with 1½ volts or over. The napalm is used for night illumination as well as for anti-personnel effect.

An unusual feature of a recent attack was the provision of sandbags in the first resupply train, timed to arrive immediately after the objective was taken. The enemy lived up to the expectation of counter-attacking in an effort to take back the positions just snatched from him. The bags hastily filled with rock and dirt gave the men some protection not otherwise afforded on the rocky hill tops. Incidentally, individual sand bags were found to be convenient receptacles in which to carry ammunition and other supplies, thus discarding the extra weight of the outside packaging and crating. This gave two strings to the bow: not only were the supplies more easily handled, but the bags themselves were available for immediate use. One platoon leader believes that next time a similar piece of terrain has to be taken, the resupply train might include some composition "C" explosive, which, when set off by hand grenade fuzes, would blast hasty foxholes for his men.

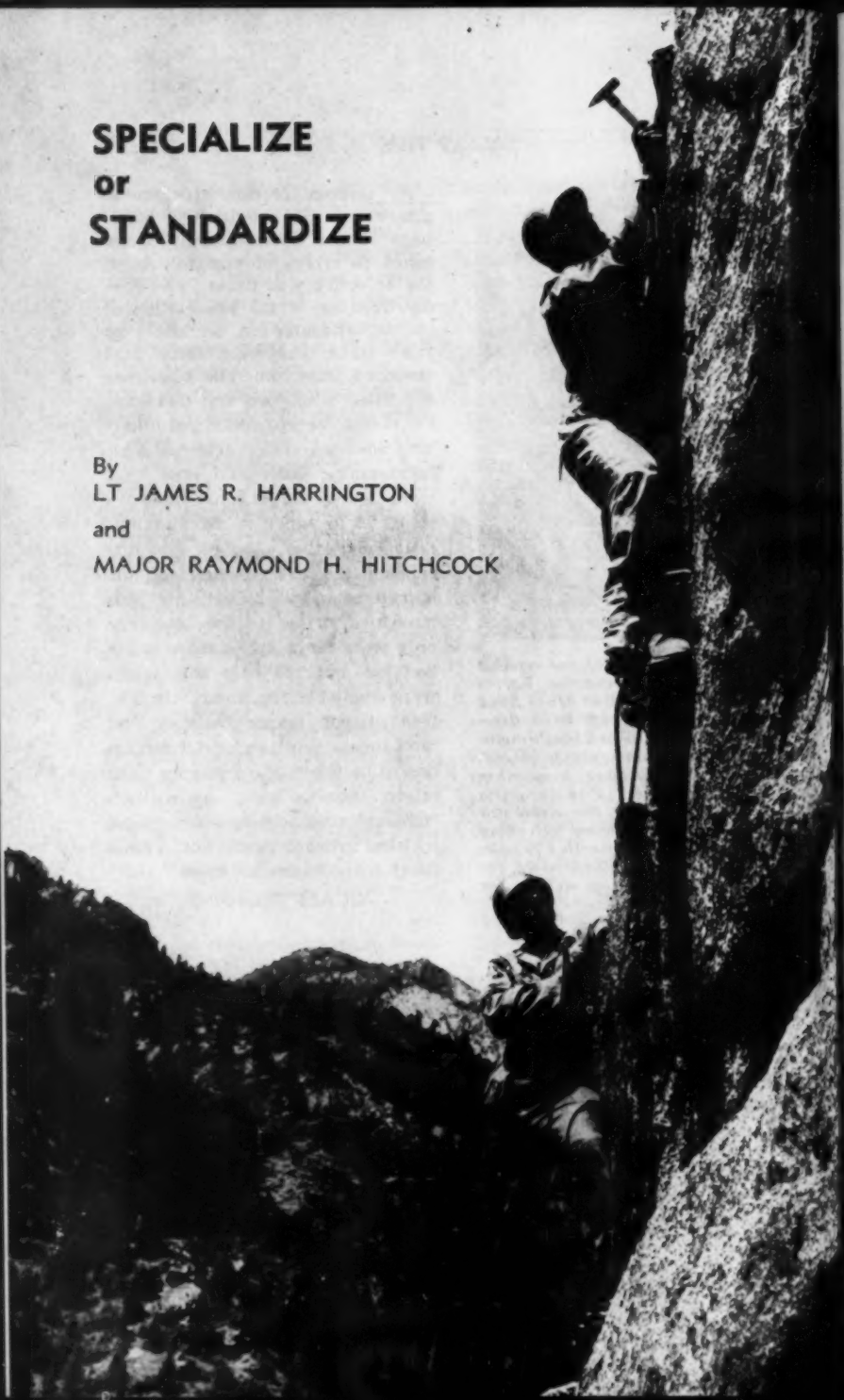
— OCAFF Training Bulletin

Wars are fought with weapons but they are won by men. It is the spirit of the men who follow and of the man who leads that gains the victory.

General George S. Patton, Jr.

SPECIALIZE or STANDARDIZE

By
LT JAMES R. HARRINGTON
and
MAJOR RAYMOND H. HITCHCOCK



A PLEA FOR MOUNTAIN TROOPS

By LT JAMES R. HARRINGTON, Infantry

An inspection of the globe and consideration of areas of future operation, plus the experiences of a roadbound army in the early days of the Korean conflict, emphasize the need to prepare for mountain combat. Our dependence on our mechanization is obvious to our enemies, current and potential — and an Army pledged to halt aggression seldom picks its own fields of battle. There is too much alpine and sub-alpine terrain in our probable future to continue to ignore the existence of such regions.

The critics of the recently proposed and abandoned "light" division state that the standard division could do the job by "shucking its heavy equipment." Of course they could. American soldiers have a tradition of doing the job. Americans have thrown rocks when the ammunition ran out and they have fought with ragbound feet when adequate winter footwear was denied them. Is that reason to argue, "Why boots? A barefoot soldier can fight." Would any thinking soldier propose the disbanding of our airborne organizations with the argument that a few graduates of the parachute course scattered throughout the standard divisions could give airborne instruction with the result that any division of Infantry could double as airborne? What would become of efficiency and airborne technique and development? Such a proposal would meet with little approval; but just such an argument is put forth by most opponents of a unit of mountain specialists.

Sending certain men to a short course of mountain training and returning them to a standard unit to impart their knowledge is an optimistic plan. It is terrifying simplification if it is then expected that this expedient alone will enable an army to operate at maximum efficiency in real mountains, and it is unfair to the men called upon to so operate. Truck drivers do not become muleskinners by simply substituting animal transport for motors. A snowbound rifleman does not become a military skier by just handing him a pair of boards. The making of an efficient mountain artilleryman requires more than the issuing of break-down howitzers and packsaddles.

The goal of our Army — outnumbered by the huge manpower resources of our opponents — must be maximum efficiency. The establishment of at least a small body of

Figure 1. Taking the hard way around, as these Camp Carson mountaineers are doing, often catches the enemy off guard.

trained mountain troops, available for those operations best performed by such specialists and *augmented* by standard units with some degree of mountain training will help to attain the maximum of efficiency in rugged mountainous terrain. To rely alone on standard units, subject to crowded training schedules, attrition and personnel turnover, "instructed" by the planting of a few mountain specialists is a wasteful and perhaps disastrous expedient. Are we a nation so impoverished and niggardly of manpower that we cannot spare just one regimental combat team of mountain troops?

The advantages of such a unit are many. First of all, it can perform the duties, with attachments, of the standard unit whereas the converse is not true. One regiment of mountain Infantry organized in battalion combat teams — the most feasible tactical grouping for mountain warfare — would make available, simultaneously to commanders in several theatres, a unit trained and organized to negotiate impassable terrain and experienced and equipped for the construction of mountain installations — rope bridges, fixed rope ascents, vertical hauling lines, suspension traverses, etc. Such a unit could spearhead attacks by making use of terrain inaccessible to inexperienced troops and could form the nucleus of defense forces in mountain terrain — one of the few places left in modern battle where small numbers of determined and experienced troops can hold out in the face of a preponderance of materiel. The team's presence in a theatre would insure the availability of mountain equipment when needed and it could carry a T/O&E excess for issue to augmenting standard units when required. A unit of mountain specialists would facilitate the necessarily limited mountain training of standard Infantry in the area and these troops would be trained by experts in considerable number, who would have the proper equipment on hand.

The existence of mountain troops in the theatre might often affect the decisions and deployment of the enemy and would also provide a theatre commander with troops readily air transportable in combat groupings without dependence on heavy equipment. A German mountain division played just such an air-landed role in the vertical envelopment of Crete.

Reconnaissance and raiding possibilities of mountain troops are unlimited in jungle or when, with the coming of snow or the ascent into snow, they gain mobility as the standard troops find their movement hampered.

Since the end of World War II, the Mountain Training Detachment at Camp Carson with its excellent civilian and military instructors has managed to keep some semblance of mountain training alive. As a small Mountain Training Command, this organization can develop the techniques and equipment of mountain and winter warfare, the supervision of training, and coordination with mountain troops of allied armies.

A tactical unit of mountain Infantry should be organized immediately. The artillery support is already available in the famous 4th Field Artillery Battalion — our one and only pack artillery unit.

Most important to the mainte-

nance of a mountain combat unit would be the establishment of a small mountain replacement training organization. Once a special unit suffers the attrition of combat losses, rotation, and transfer of personnel, its value ceases and its existence is unwarranted unless adequate, trained replacements can maintain its specialist integrity. The replacement training unit could also provide limited mountain training for selected troops of standard organizations.

Although a very optimistic plan, the establishment of a mountain troops reserve pool would maintain the training of veterans of mountain units and would attract many mountaineers and skiers as recruits. Personnel of such a pool could be attached to present reserve units where their training could in some degree be imparted to the unit as the limited mountain training that would benefit all combat and supporting troops. The mountain reservists — with their individual equipment — could congregate at the Mountain Training Center for periodic summer training.

Establishment of a mountain unit would influence the recruiting of a group of personnel very valuable to the Army. The popularity of skiing and mountaineering, once considered rich men's sports, is ever increasing in America. The two sports are somewhat allied and most people participating in one show at least an interest in the other.

An answer to future "Heartbreak Ridges" is the lesson of Riva Ridge — the formidable mountain position in Italy, finally taken by 10th Mountain Division troops who, under cover of darkness, accomplished a fixed-rope ascent and captured the "unapproachable" position. By prompt action now, our Army — a force committed to world wide employment — can help take the heartbreak out of future mountain operations.

Time may be short and the peaks and ridges are wearing down but little.

THE CASE FOR STANDARDIZATION

By MAJ RAYMOND H. HITCHCOCK, Infantry

Very shortly after World War II had ground to a halt in Europe and prior to the atom-bomb finish of the hostilities in the far East, a board appointed by Headquarters ETOUSA was given a broad and important mission. The mission was to recommend, on the basis of experience, what types of divisions should be included in our post-war Army.

Figure 2. Standard Infantry units operating in Korea's mountainous terrain have won the admiration of the world.

Many persons of great experience,

including Generals Marshall, Bradley, Patton and a host of others, contributed to the mass of information that was correlated and analyzed by Brigadier General A. Franklin Kibler and his board. The report has had a rather tremendous effect on the organization of the Army. Whether results have been attributable to this source alone is, of course, a highly debatable question but certainly the recommendations contained in this report must have formed the basis of studies which have resulted in the present organization.

One of the important considerations in the scope considered by the Kibler board could be expressed as, "who's right in the specialist division versus the standard division argument." In many an Army bull session, argument has waxed heated over the necessity for mountain divisions, jungle divisions, light divisions, or motorized divisions as opposed to using a standard division with minor on-the-spot modification of T/O&E's for the special operation-type job.

The proponents of the specialist-type division usually have a pretty convincing ax to grind in these arguments. Champions of the standard division usually contend that the ax of their opponents is akin to the one that an early military writer proposed for each soldier to carry in his pack — "in case he had to break down a door."

The board was not a bull session. It considered the cold, factual data compiled from combat experience and lessons learned in the European theater of operations.

Part of the conclusion reached was that actual experience in special operations (particularly mountain operations) does not indicate a need for special type divisions. It was pointed out by the board that Infantry divisions with minor modifications had proved capable of conducting satisfactory operations in all types of terrain.

Let us put aside the yellowed pages of the Kibler report and, for the moment, disregard the bald statements of the fact, that a standard Infantry division can operate effectively in special operations, as found in our bibles such as FM 100-5 and 70-10. Rather let us approach the question of a specialized division in light of our potential enemy, of the globe, and of the war in Korea, using as an example for scrutiny the need for a mountain type division.

Some basic premises must be made: First, a special purpose division, such as a mountain division, is limited by training and equipment in scope and area of its employment. Second, a standard Infantry division is extremely versatile. Third, as demonstrated in the last war, an Infantry division earmarked for a given theater can in six months time, superimpose upon its basic preparation the additional training in tactics and equipment required for a peculiar role. Fourth, to maintain its efficiency, a special purpose division must have replacements who are trained in that specialty.

It is no breach of security to state that the total mobilized strength of the US and our probable allies is going to fall considerably short of our most probable enemy and her satellites. The discrepancy in strength is such that if we were to become involved in an all out war against this enemy we would have

to husband our manpower as never before. Certainly we cannot afford the luxury of the specialized mountain division that would be nice to have for fighting that might occur in mountains — a force that would be totally inadequate for any major action if there were not dozens of such divisions. In a war against such an enemy we cannot burden ourselves with the ax which *may* be needed. Instead we must carry a tool which can dig and hammer and perhaps kill as well as chop down doors.

It is true that much of the earth's surface is mountainous. Although accurate surveys have never been made, most geographers estimate ten percent of the exposed surface of the earth is covered with mountains, of which a portion are alpine or sub-alpine. It is equally true that no strategically decisive battles in any major war have been won or lost in mountainous areas. Strategy since the beginning of armed and organized conflict has included the by-passing of such areas whenever possible. Population centers so often chosen as strategic objectives are not located in alpine or sub-alpine terrain. Routes of communication are scanty and an enemy who chooses to occupy and defend alpine terrain will assuredly deny himself that portion of his forces for use elsewhere. Mountainous areas are not well suited to the employment of mass tactics so characteristic of our potential enemy.

The war in Korea is being fought on a peninsula — a mountainous peninsula. If there were a flat area on either flank it is doubtful that much fighting would take place in these mountains.

Essentially, the war in Korea must be considered a mountain operation, but do we need mountain divisions to fight it? The lessons that are learned there and reported tell the story of men and units learning to master the terrain as well as the enemy, yet in none of these lessons can there be found substantiated reasons for our Army to plunge headlong into the creation of specialist mountain units. Appeals from junior and senior leaders in this war call for better physical conditioning of replacements, not knowledge of how to rappel; better understanding of tactics and use of weapons, not skill with pitons and a nylon rope; more helicopters for evacuation, not materials for horizontal hauling lines or suspension traverses. The lessons of Riva Ridge (cited in the preceding article) have little application to the Korean hillsides or the Communist foe.

Many advocates of the mountain unit offer arguments such as these:

"A mountain regiment can perform the duties of a standard infantry regiment — if attachments are made."

This, of course, is true: true if the regiment is, in effect, put on a standard T/O&E.

"A standard regiment, subject to crowded training schedules, harassed by attrition and personnel turnover, and instructed by a few mountain specialists planted in the organization cannot perform the mission of mountain infantry."

Totally and unequivocally wrong. The 38th Regimental Combat Team in the fall and winter of 1945-46 with only minor modifications in organizational equipment (none in organization), although undergoing a constant turnover in

personnel due to discharges under the point system then in effect, trained itself in rock climbing, and oversnow operations and was trained in pack transport. In the case of both the rock climbing and the oversnow operations the training was conducted by a small cadre of 38th Infantry officers and men who themselves had received a short course in this type training before the unit training started. Most of the cadre had no previous experience in rock climbing or skiing. The training ended in an oversnow maneuver in the spring of 1946 and at that time even the old Tenth Mountain men in the Mountain Training Center had to agree that the regiment was proficient.

"The existence of mountain troops in a theater might often affect decisions and deployment of the enemy."

It is extremely doubtful that our potential enemy would be much concerned. He'd probably rather have us sitting in the rocks pulling up our rations on a suspension traverse than have another combat effective division in the way of his mass armored and Infantry push.

"Reconnaissance and raiding possibilities of mountain troops are unlimited."

Agreed; however, this is a mission that a standard Infantry unit can also do with an amount of specialized training.

"Replacements must be mountain trained. A mountain replacement training organization will be needed."

Absolutely true if a mountain unit is to continue as a specialist organization. This added requirement on our already overtaxed crystal ball as to how many replacements would be needed would, without doubt, be wasteful or inadequate, depending on the unpredictable attrition rate of the mountain unit.

What we need in our Army is plain. We need a proper balance of Infantry, armored and airborne divisions — airborne divisions until development of helicopters, assault aircraft, and so forth make all Infantry divisions airborne in the sense of being able to participate in airborne assaults.

These divisions must all have the requisite characteristics of:

Versatility: The ability to fight in jungle, mountain, desert or plains — in temperate, tropic or arctic climates. We must be capable of executing strong offensive operations, including amphibious landings and vertical envelopments.

High degree of mobility both en route to and on the battlefield: Our entire combat echelon should be air transportable to permit rapid movement over great distances. We must be able to make such moves complete and at full fighting strength. In the area of combat, we must possess superior mobility in order to concentrate decisive strength at the decisive point despite inferiority in numbers.

Hard hitting: Our divisions must be able to develop heavy fire power and shock action, coupled with the ability to stay and fight.

An answer to the pleas that are heard for mountain divisions is the history of divisions like the 88th Division, a standard division that fought in mountains for a year while the specialists were practicing with the skis they didn't use. Our Army, committed to worldwide employment and without posi-

tive knowledge as to where the next war may be fought, cannot afford to specialize. Only through standardization can we provide our senior commanders with the flexable command that will be needed to fight the next one.

Manpower is short and the division slice isn't getting any smaller.

INSTRUCTIONAL MATERIAL

As a service to its readers, the *Quarterly* regularly lists new instructional problems available through the Book Department, The Infantry School. All these problems contain lesson plans and narratives for the instructor. Additional items will be found on page 101.

Problem #1142, **Marksmanship, Record Practice, Carbine M2.**

A four hour problem including Record Practice, Course A. Price, 10¢.

Problem #1260, **Technique of Rifle Fire.**

A four hour problem on methods of instruction in training in technique of rifle fire; steps in training; methods of estimating ranges; target designation; rifle and automatic rifle fire and their effect; application of fire; assault fire. Price, 10¢.

Problem #1306, **Mechanical Training, Cal .50 MG.**

A two hour problem on general data; disassembly and assembly; head space adjustment; functioning, use of head space and timing gages. Price, 10¢.

Problem #1333, **Marksmanship, Cal .30 MG, M1919A6.**

An eight hour problem on general orientation; methods of instruction; instruction practice firing, Table II, Course A; concurrent training in mechanical training, and measuring and laying off angles. Price, 10¢.

Problem #1370, **Technique of Fire, MG Cal .30 and MG Cal .50.**

An eight hour problem giving characteristics of fire; classes of fire; fire distribution; fire control; fire commands; overhead fire; familiarization firing with cal .50 MG. Price, 10¢.

Problem #1379, **Technique of Fire, MG Cal .30.**

An eight hour problem on final protective lines; sectors of fire; range cards; auxiliary aiming point; position defilade. Price, 10¢.

Problem #1802, **Fire and Turret Control Equipment, Tank Weapons.**

A two hour problem on orientation with the fighting compartment. Price, 10¢.

Problem #1808, **Mechanical Training, 90-mm Gun, M3, on Medium Tank M26 and M46.**

Three hours on characteristics and capabilities of the 90-mm Gun, M3, on Medium Tank M26 and M46; description and general data; disassembly and assembly; functioning; care and cleaning; servicing of the recoil mechanism. Price, 10¢.

The above items may be ordered from
The Book Department, The Infantry School, Fort Benning, Georgia

THE STADIA SIGHT

By MAJ LEE W. FRITTER, Infantry

One of the greatest needs of the Doughboy today is a small, lightweight, accurate range finder. With the accuracy and destructive power of modern weapons, especially direct fire weapons, a fair marksman can wreak havoc upon enemy targets with one or two rounds — if he knows the range to the target.

Experience has shown us that the Infantryman's most common method of range determination, estimation by eye, produces an average error of 20 percent. This is too great if we expect the gunner to hit his target with the first or second round. To achieve such quick results, he must reduce his error in initial range determination.

We do not, at present, have a satisfactory Infantry range finder. However, as an interim measure to aid the gunner on recoilless weapons in reducing their range determination errors, a simple device has been incorporated in the sight itself. The rifles of the entire recoilless family, the 57-mm, 75-mm and 105-mm rifles, are now equipped with telescopic sights having two curved lines, *stadia lines**, etched on the sight reticle. The curved lines of this stadia sight, properly used, assist the gunner in estimating ranges to targets, especially ranges to tanks.

The reticle patterns of all our recoilless weapons are very similar.

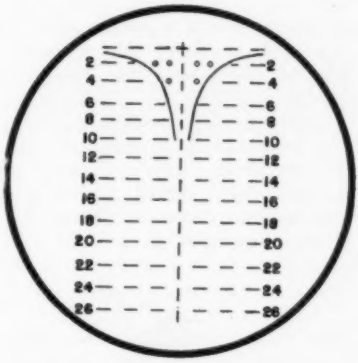


Figure 1. Sight reticle pattern.

They differ mainly in the maximum range graduations for the various caliber weapons. Frequently referred to as the tree type, the reticle has a boresight cross, representing zero range and zero deflection, near the top. (See Figure 1.) Directly beneath the boresight cross is a vertical broken line along which are the range graduations for firing at stationary targets. Each segment

*In October 1948 Lt Col A. J. Stuart, then Ordnance Officer at Army Field Forces Board No. 3, Fort Benning, Georgia, devised a method of applying the stadia principle to direct fire sights for recoilless weapons. The Artillery Branch of the Ordnance Research and Development Division developed his idea to a successful conclusion.

of the vertical line and each space between segments represents one hundred yards of range.

Numerals to indicate the range in hundreds of yards are placed at each end of a series of horizontal broken lines. The horizontal lines are used to measure the lead to apply when firing at moving targets. Leads are expressed in angular measurement, each lead amounting to five mils. Each line segment and each space between segments along the horizontal lines is equal to one lead or five mils. Thus the reticle is graduated up to six leads or thirty mils on either side of the vertical line. The small circles between the curved stadia lines indicate the ends of lead lines. The lead lines themselves are omitted to avoid cluttering the sight reticle. The vertical line divides equally the distance between the two curved lines.

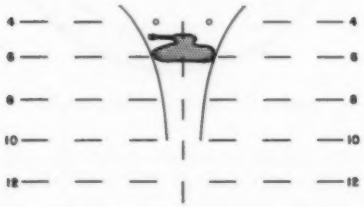


Figure 2. Tank appears perpendicular to line of sight. Range 575 yards.

The stadia lines may be used to estimate ranges from 100 yards to about 1000 yards. To illustrate the application of the stadia principle let us assume that our target is a tank. We consider four conditions in determining range. The first condition is when the tank appears perpendicular (broadside) to the line of sight. To determine the range we simply take a sight picture such that the extremities of the tank rest between and just touch the two stadia lines. (See Figure 2.) The range to the tank is that which is indicated opposite the points where the tank touches the stadia lines, in this case 575 yards.

The second condition is when the tank is headed directly toward the gun, or directly away from it. In this case we take a sight picture such that one side of the tank outline touches the vertical line and the other side touches one of the stadia lines. (See Figure 3.) The

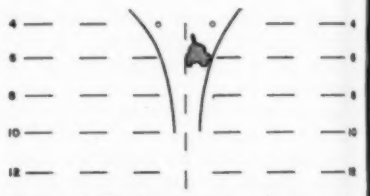


Figure 3. Tank appears to be travelling directly toward or away from the rifle. Range 600 yards.

range is read opposite the point where the silhouette touches the stadia line. In the case illustrated in Figure 3 this range is 600 yards.

The other two conditions involve the appearance of the tank at angles other than perpendicular or head on. In one case the tank is approaching or going away at such an angle that the length (the longer dimension) of the tank appears greater than the remainder of the outline. To determine the range we arrange the sight picture in a manner similar to that for a tank facing perpendicular to the line of sight. We place the tank between the stadia lines so that the extremi-

ties of the entire outline just touch the stadia lines. (See Figure 4.) The range is read opposite the points where the tank touches the stadia lines. The indicated range in this case is 575 yards. (Use this sight picture also when the apparent length and apparent width are equal.)

The other situation has the tank approaching or going away at such an angle that the width or shorter dimension of the tank appears wider than the remainder of the

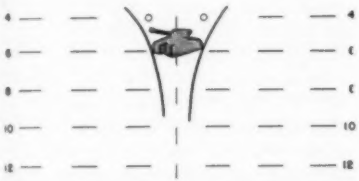


Figure 4. Tank appears to be traveling at such an angle to the line of sight that the side appears longer than the front or rear. Range 575 yards.

silhouette. In this case we arrange the sight picture similar to that used when the tank is approaching head on. We place the tank between the vertical line and one stadia line so that the vertical line touches one front corner of the tank and the stadia line touches the other front corner. (See Figure 5.) Notice that in this case we do not place the entire silhouette between the vertical line and the stadia line. The range is read opposite the point where the tank touches the stadia line, in this illustration, 600 yards.

Note particularly that the various sight pictures we have discussed only *assist* the gunner to determine ranges. If the target is moving he must apply leads just as though the stadia lines were not on the reticle. (See Figure 6.)

With this as a background, we can better understand the flexibility, capabilities and limitations of the sight if we examine how the curved lines are located on the sight reticle. As the term "stadia"

Figure 5. Tank appears to be traveling at such an angle to the line of sight that the front or rear appears wider than the side. Range 600 yards.

implies, the use of these lines involves the stadia principle. The dictionary of military terms states in part — "Stadia — an instrument that measures distances by means of angles. It consists of lines or cross hairs on the lens of a telescope. A graduated rod is held at the point to which the distance is to be measured. The number of graduations that can be seen between the lines is converted into distance by a simple formula."

In this case we do not use a graduated rod, but instead we sight on a tank whose dimensions are assumed to be 20 feet long by 10 feet wide. It is recognized that all tanks are not of this size, but most are close enough so that no major error results. The simple formula used to convert angles into distance is an application of the "WORM" or mil-relation formula, W=RM, where W is width expressed in yards, R is range in thousands of yards, and

M is the width expressed in mils.

Since we measure distances by means of angles, we determine the angular length or the length of our tank measured in mils at various ranges. Our tank is assumed to be twenty feet or 6.66 yards long and 10 feet or 3.33 wide. When we place the length, expressed in yards, into the formula W=RM using a range of 200 yards for example, we have

$$6.66=.2M \text{ or } M=\frac{6.66}{.2}=33.3$$

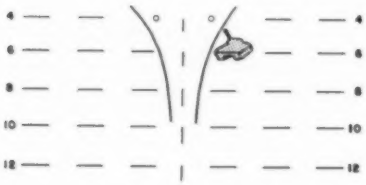


Figure 6. Sight picture for tank moving from right to left at a speed requiring two leads. Range has been determined as 600 yards.

Thus, at a range of 200 yards the length of a tank expressed in mils is 33.3 mils. You will notice that the stadia lines on the sight reticle at the points opposite the 200 yard range indicator are 33.3 mils apart. As stated earlier, the vertical line splits this measurement, 16.65 mils being on each side of the vertical line.

In a similar manner we can determine the length, expressed as an angle, of the tank at other ranges.

For example at 400 yards it is

$$\frac{6.66}{.4}=16.65 \text{ mils;}$$

at 600 yards it is $\frac{6.66}{.6}=11.1$ mils;

at 800 yards it is $\frac{6.66}{.8}=8.33$ mils;

at one thousand (1000) yards

$$\frac{6.66}{1.0}=6.66 \text{ mils.}$$

At each of the ranges for which we have computed these angles, the distance between the stadia lines on the reticle corresponds to the angular length of the tank. Hence the placement of the stadia lines.

The stadia sight should not be considered a range finder — it is an *aid* to range determination. Certain errors are inherent in it. For example, the stadia lines are placed on the reticle on the assumption that a tank is 20 feet long by 10 feet wide. Any variance from these dimensions introduces an error. Best results are obtained when the tank appears either broadside or head-on to the gunner. If it approaches at other angles another error is introduced. Also we must take into account the human errror — the error the gunner may make in taking the sight picture or in reading the indicated range.

This discussion has been limited to use of the stadia sight against tanks. The same sight can be used to advantage, when properly applied, on other objects, whose exact or approximate size is known. Knocked-out tanks, not uncommon on the battlefield, can be used to estimate the range to other targets in the vicinity. The cost of producing the stadia sight is negligible, yet it produces results far superior to unaided range estimation. It is a handy tool that saves rounds, saves money, and in the long run will save lives.

THE RANGE DEFLECTION SCALE

By Lt. ORVILLE C. FOLKERTS, Infantry

"Isn't there an easier way to measure distances on the M10 Plotting Board than counting squares?"

Certainly there is. It's so simple you'll kick yourself for not thinking of it sooner.

The answer is, a ruler — a Range-Deflection Scale. It's as simple as that.

"What can I do with this scale?"

You can save time and increase your accuracy in the use of the M10 Plotting Board. You can measure distances *directly*—no more tedious counting. You can set off the deviation and range change from one round to the next. You can record concentration numbers, azimuths, and ranges to your most important targets on the frosted center section. In short, you can streamline your computation of firing data.

"How?"

Consider this example. Your 81-mm mortars are mounted on a magnetic azimuth of 900 mils and are ready to register on a base point. You are the computer. You have made a mark on the movable disc of the M10 Plotting Board opposite "900 mils," which represents the base stake marking the center of your sector; and four other marks (representing the additional aiming stakes).

Your forward observer calls in a fire request to mark center of sector and gives his azimuth to the base point as 450 mils.

After a quick safety check for location of friendly troops, you plot the first round with sufficient range to clear the front lines. You then issue a fire command to have the Number 2 mortar fire a round at ZERO BASE STAKE and at a range of 1000 yards.

The round is fired and your FO sends back this correction:

RIGHT ONE-FIVE-ZERO.
ADD TWO HUNDRED.

You rotate the movable disc of your M10 Plotting Board until the observer's azimuth — 450 mils — is lined up with the index.

Now — rather than take the time and trouble of counting three squares to the right and four squares up from your first plot, simply place the Range-Deflection Scale on your board as shown in Figure 1, and — reading right 150 yards add 200 yards — place a dot at 200 along the range scale.

No counting — no interpolating.

You continue this procedure until the base point registration is complete. Since you may want to fire this mission again, you record the concentration number (in this case, "BPR"), azimuth, and range for

hitting the base point on the frosted center section of the Range-Deflection Scale.

Deviation and range changes of

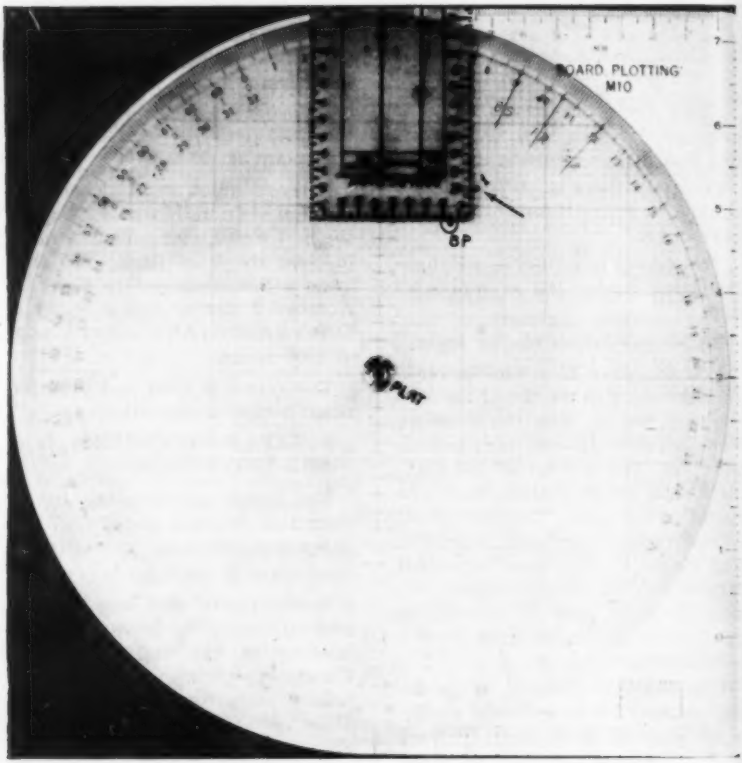


Figure 1

25 yards are easily made by using the Range-Deflection Scale, since it is divided into 25-yard graduations. For example, the FO requests fire be shifted: FROM BASE POINT, RIGHT TWO-TWO-FIVE, DROP TWO-SEVEN-FIVE. Observer azimuth is 1300 mils. You rotate the movable disc to the observer's azimuth, 1300 mils, and place the Range-Deflection Scale so that the Base Point is at the 225-yard graduation on the deflection scale, then place a dot along the range scale at 275 as shown in Figure 2.

"What else can the scale do?"

Suppose your platoon is plotted at the pivot point of the movable disc of your plotting board. You notice that there is not enough

range above the pivot point to allow you to fire on all of the targets in your sector. To compensate for this, plot the platoon 500 yards or more *below* the pivot point.

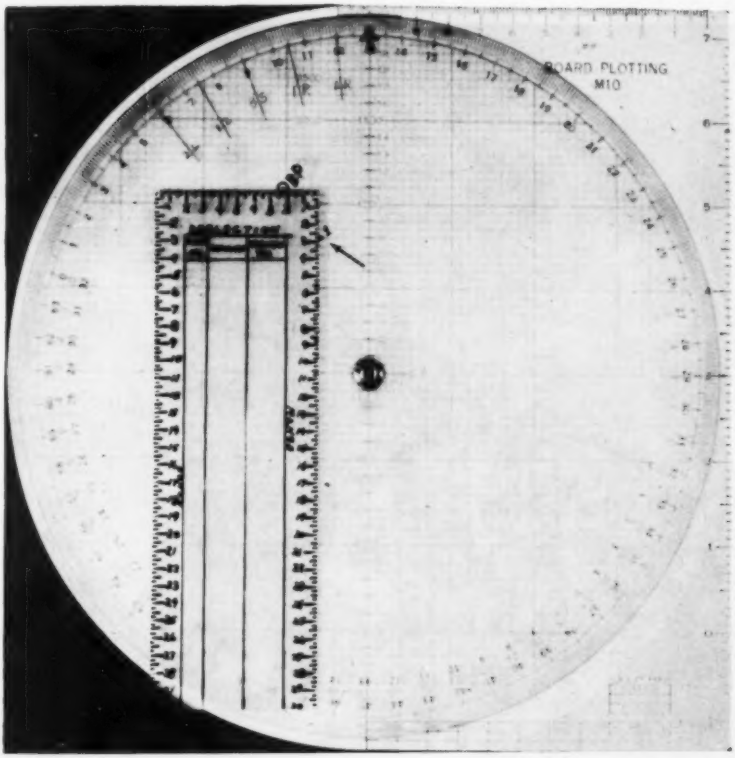


Figure 2

You receive a fire request from your FO to shift FROM BASE POINT LEFT ONE-SEVEN-FIVE, DROP ONE-SEVEN-FIVE. Observer-target azimuth is 450 mils. Rotate the movable disc to 450 mils and plot the first round. To determine the direction and range you will have to use the parallel line method for aligning the platoon and the plot of the round. Simply place the range scale so that one corner is at the plot and the scale is aligned on the platoon position. Now rotate the disc and use the scale as a straight-edge in aligning the plot and the platoon position along the same vertical line or equidistant from the same line. To find the

direction, take the reading at the index marker; read the range direct from the range scale as shown in Figure 3. The correct range is 1770 yards.

when the sheaf is opened or closed, the data for each mortar must be computed. Here is where the range-deflection scale pays off again.

You are the computer for a 4.2-

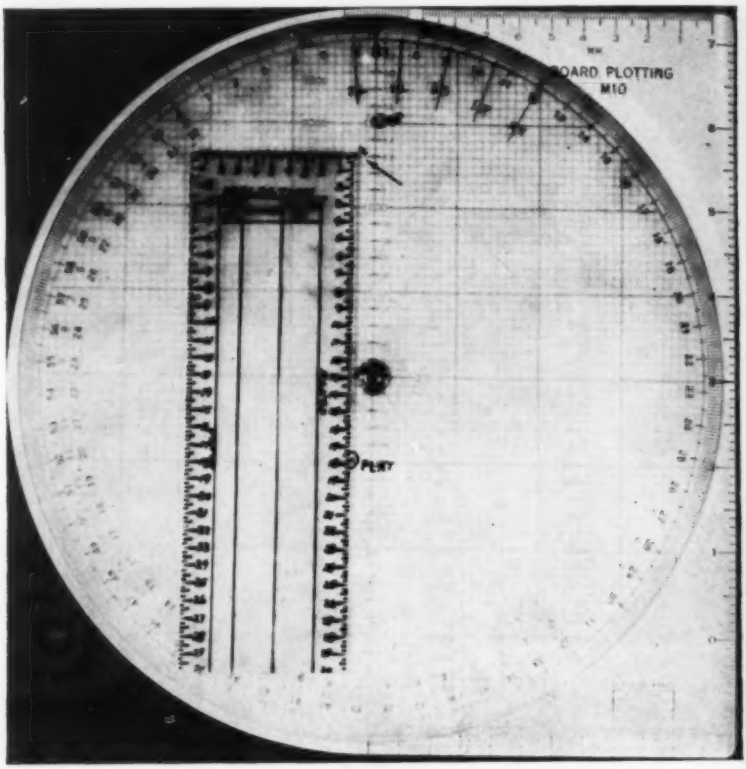


Figure 3

As you know, different types of fire require computation of the range and deflection for each mortar of the platoon. Firing the normal sheaf, all the mortars use the same range and deflection as the base mortar (Number 2 or 3): but

inch mortar platoon and have plotted the platoon position 1000 yards below the pivot point. The FO requests a screening mission and desires the Number 1 mortar to adjust on the right flank of the area to be smoked. The FO ad-

justs Number 1 on the right flank. The range is 1970 yards and the deflection is 3050 mils. He then requests the sheaf be opened, left, 500 yards. You rotate the board to

mortars. Use the parallel line method to align each mortar position and corresponding position in the sheaf. Read the deflection at the index marker and read the range *direct*

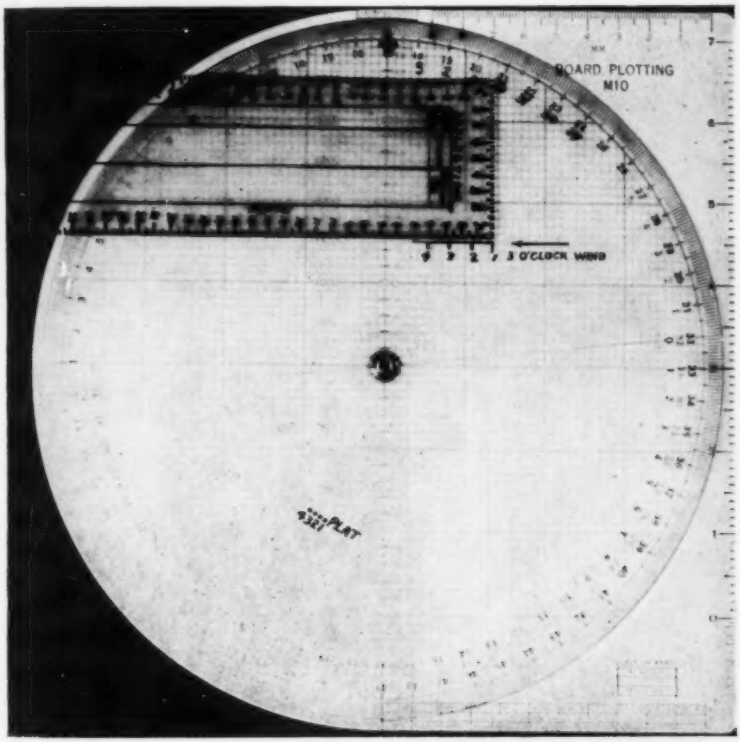


Figure 4

the observer's azimuth of 1700 mils and use the range scale to measure the width of the sheaf on your plotting board as shown in Figure 4.

Your next task is to find the deflection and range for the other

from the range scale as shown in Figure 5. In this instance, deflection for Number 4 is 3180 mils and range 1770 yards.

A heavy mortar company fire chart can be made by plotting the platoons of the company on the M10

Plotting Board. Use of the Range-Deflection Scale simplifies the work of massing the fires of the company. For example, you are the computer and have plotted the second platoon 500 yards below the pivot point and registered on the company base point. After the FO has registered the 1st Platoon on the same base point, you can take the azimuth and range at which the 1st Platoon hit the base point, and plot the platoon position on the company fire chart. To do this, rotate the movable disc to the azimuth (in this case 1850 mils) and back-plot from the base point *the range at which the base point was hit* — 1850 yards. Use the Range-Deflection Scale as a straight-edge to back-plot (make sure that it is parallel to one of the vertical lines) and place a dot at the 1850 graduation marking the position of the 1st Platoon as shown

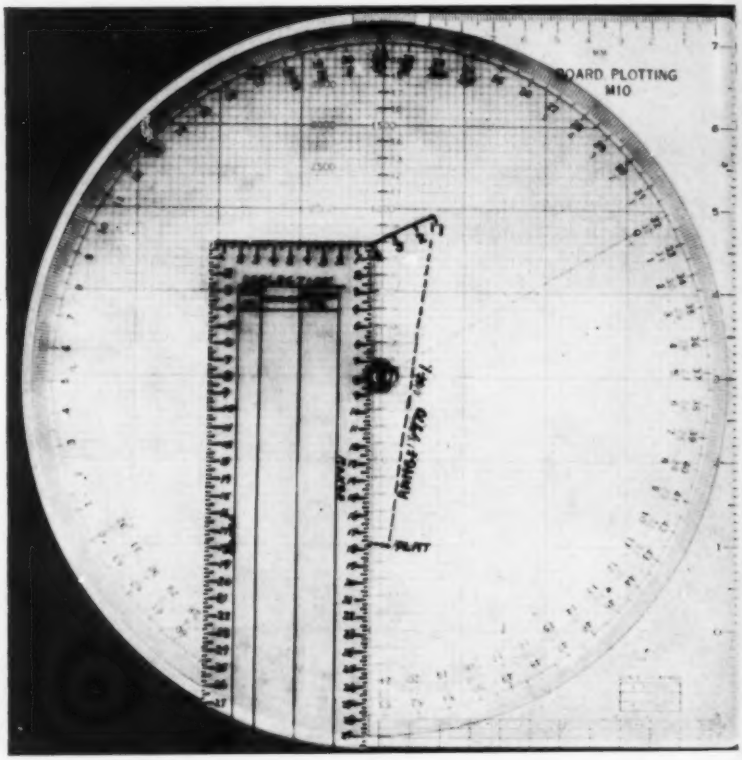


Figure 4

in Figure 6.

Tests now being made by the Mortar Committee, Weapons Department, The Infantry School, indicate that the Range-Deflection Scale* is a particularly useful aid in using the M-10 Plotting Board. They are sure that you'll agree — it's as handy as a third thumb.

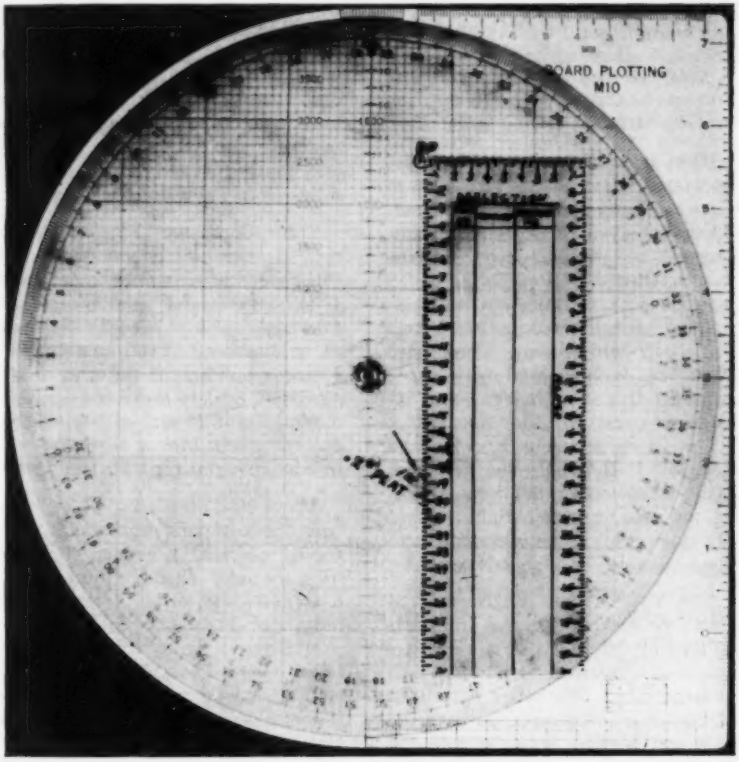


Figure 6

*The Infantry School's Book Department and all of its branches carry the scale and fill mail orders. The price is 35 cents.

PURSUIT!

By MAJ JOHN R. FLYNN, Infantry

"The pursuit starts when the enemy cannot maintain his position and endeavors to escape by retreat."

This, from Field Manual 7-10, accurately describes the situation in Korea along the Naktong River around the 20th of September, 1950. During the earlier part of the month, United Nations forces began a series of heavy battalion and regimental attacks from the Pusan Perimeter which were coordinated with the Inchon landing. Unable to resist this savage vigor and relentless pressure, the North Koreans were severely mauled and decimated. Between the 17th and 24th of September, the disorganized enemy was in hasty flight toward the northern escape routes to prevent capture or annihilation.

The 7th Cavalry Regiment's 2d Battalion had bludgeoned and beaten its way through a strong defense line near Waegwan around the 17th of September. The other battalions of this regiment poured through the hole and began a series of hill and road clearing missions which ended near a village called Tabu-dong.

Here, the 3d Battalion and its attachments became "Task Force Lynch" and started the motorized pursuit of the North Korean units. Moving rapidly, the first day and night this task force destroyed many enemy and captured a great deal of equipment; crossed the Naktong River and established a bridgehead for the 1st Cavalry Division; and finally reached Sangju, some 36 miles from Tabu-dong*.

Enter Company "K", 7th Cavalry: *"It [pursuit] begins only upon the orders of a higher commander . . . . characterized by boldness and rapidity . . . is pushed to the limit of endurance."* From Sangju to Poun — another 36 miles — Company "K" was to move out on regimental order (*"pursuit begins only on orders of a higher commander"*) to continue the pursuit.

About 1030 on the 23d of September, the company commander received a warning order: "Prepare to move out!" Thirty minutes later, a fragmentary order arrived from battalion: "Report to regiment. You'll move your company to a town called Poun. Unless you encounter strong resistance, keep going and keep us informed. When you get to Poun, give us a situation report. Additional instructions will follow." Quite brief, but in such a rapidly-moving situation mission-type orders were necessary. The company commander was permitted maximum flexibility in the accomplishment of his mission since he was operating at such an extended

*Sangju was secured by the 1st Battalion which had passed through the bridgehead line.

distance from his parent unit.

After receiving this order, the company commander reported to regimental headquarters for the final briefing. Understandably, he received meager information on road conditions, friendly unit locations, and the enemy. He was given a 1:250,000 map — the only map the company was to have during the operation. A route was designated. Speed was so important that the briefing might be summed up as, "GET ON THE ROAD AND GET MOVING!"

"Security measures are limited in order to aid the advance . . . pursuing elements are usually motorized and maximum use is made of vehicles and tanks to overtake the enemy . . . actions of the leading rifle company resemble those of the support of a motorized advance guard battalion . . . elements of the heavy weapons company are attached to the company. . . ." This diminutive task force included one rifle company, one section of tanks, one 75-millimeter recoilless rifle mounted on a jeep, a section of heavy machine guns mounted on jeeps, and an artillery forward observer. (See Figure 1)

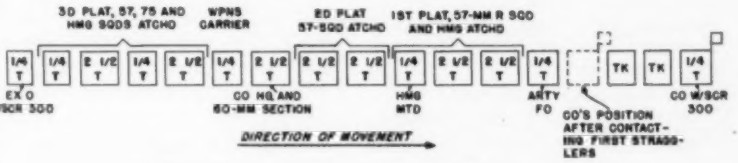


Figure 1. Composition of the task force.

Initially, the company commander's jeep was leading the column. Since there was only one map for the entire unit, he positioned himself where he could control and guide the column. Another factor influencing this decision was the absence of radio communication with the tanks. The company commander changed his position after he was certain the tanks knew how fast they were to move and what they were to do in case of doubt.

About five miles out of Sangju, the first "Situation and Requirement" confronted the company commander (See page 50). The bank on the right and the sheer drop on the left prevented any thought of by-passing the crater. The mediocre repair job had enabled rear-guard North Korean units to cross but could never hold our trucks, much less the two tanks.

Solution: the men were ordered to detruck and begin pioneer work to bolster the existing repairs. Stones, logs, and dirt increased the load-bearing capacity of the repair sufficiently for the trucks to cross. As the first tank rolled over the bad spot it nearly obliterated the company's repair efforts; the second tank almost rolled over the side as the road gave way beneath the tracks, but it finally ground and snorted its way to firm ground: The company had crossed.

The men climbed back into the trucks and the column moved on. At

the next wide place in the road, the lead tank passed the trucks and resumed its former place in the task force. Regiment was informed by radio of this obstacle and engineer assistance was requested to insure a rapid follow-up by the rest of the battalion.

"Security measures are limited in order to aid the advance."

The company commander realized that *mobility* and *rapid movement* were his security. For this reason, no attempt was made to check each defile, village, hill mass, or fold in the ground. No flank security was put out.

However, a 200 to 250-yard distance between vehicles was maintained to prevent a successful ambush of more than one vehicle. Of course, while moving through mountains this distance was reduced. It was hoped that this formation would deceive any enemy encountered as to the exact length and composition of the column. Another security plan — signalled by firing a white star cluster — was the pre-arranged deployment which placed the platoons and attachments on either the right or left of the road. Other alert measures — air guards and sectors of observation for each truck, tactical grouping, weapons and ammunition ready for action — were included in the security plan. Even while passing through mountain roads, security was limited to infrequent halts and quick visual reconnaissance.

"Situation and Requirement" number two confronted the company commander a few miles beyond the cratered road: engine trouble halted one of the tanks. *Should the company commander halt the entire column and wait until the tank was repaired?*

The tank section leader reported that the repair time would be about 20 minutes. Decision: the tank could catch up. There was still considerable territory to cover and time was precious; there wasn't too much daylight left; the route was easy to follow and could be marked at the critical spots. One squad of Infantrymen stayed with the tank for security.

The tank rejoined the column several miles beyond the breakdown point.

Sixteen miles from Sangju, (see map, Figure 2) the company contacted the first enemy straggler column. The North Koreans were spotted just as the tanks turned into a wide valley on a straight road. The range was about 600 yards. The North Koreans evidently thought that the column was friendly, for they made no effort to get off the road and practically ignored the tanks until a round of HE landed in their midst. The company commander ordered the tanks forward; they moved down the road, firing at the enemy column. The company commander then ordered a platoon to detruck to follow and assist the tanks (since the exact strength and capabilities of the enemy were not known). The enemy, taken by complete surprise, fled into the rice paddies and scrambled up into the hills. Three were captured and several were killed. The rifle platoon cleared the rice paddies on the sides of the road.

Once the road was clear, the troops entrucked and the advance continued. Several other straggler columns were encountered and similar actions took place, except that it was not necessary to dismount the Infantrymen. Admittedly, the com-

pany was fortunate — several days later, units using this same route were ambushed and delayed by small North Korean units which were retreating from the South.

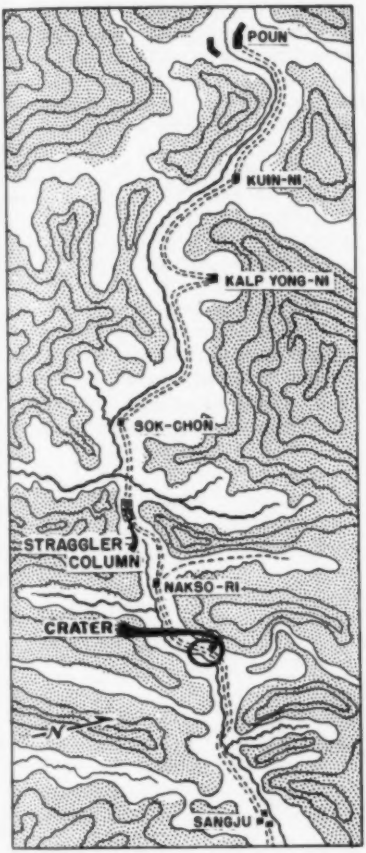


Figure 2. Strip map of the route taken by Company "K" in its pursuit. The distance from Sangju to Poun is 36 miles.

Upon arrival at Poun, about 1730, dust clouds from enemy vehicles could be seen several thousand yards to the north. Although most of the enemy had left town just ahead of our entry, stragglers in white retreat clothing were passing through town and filing along the little hills and ridges surrounding the town. Tank and Infantry patrols picked up many of these stragglers while clearing the town. Local civilians reported that the main body of North Koreans had left Poun about 1700.

Just as the company was securing the town, a friendly light plane came in low to check our identity. The platoons displayed air panels and the plane headed home to report our location. Since the company had out-run radio communication after the first five miles and the scheduled light-air cover had failed to materialize, this was the only communication "K" Company had with a friendly unit that day.

After dark, all roads leading into the city were blocked. About midnight, the heavy machine guns attached to the first platoon began their staccato: a jeep carrying five North Koreans had driven up to within 20 yards of the platoon's position. One of the communists was wounded and captured, the others escaped. One servicable jeep was added to the company's transportation.

About 0200, three North Korean officers from the 3d NK Division drove into one of the second platoon's positions. An alert sentry captured the officers, their jeep, and a sizeable payroll.

The rest of the night was quiet, except for the revelry of the local populace.

The rest of the 3d Battalion moved into Poun about noon the next day.

Looking back, certain facts are worthy of review. For example, the lack of time to plan and prepare this operation and the need for speed resulted in the sacrifice of some rather important details: no rations were taken by the company, no extra gasoline was provided for the tanks in case it became necessary to return to the starting point.

A section of tanks was not adequate; a tank platoon would have been more effective, but gasoline shortage prevented this. Had a platoon been provided, one section could have been placed at the head of the column with the other either midway back or at the tail.

Communications were woefully inadequate. Had the air cover which had been planned *materialized*, communications with the parent unit could have been maintained.

On this mission, Company "K" and its attachments captured 44 prisoners, including three officers; killed 18; and wounded an unknown number. The town of Poun was secured for use as the supply and operational base for the final phase of the pursuit which ended when the 7th Cavalry Regiment met elements of the 7th Division near Osan. No casualties were sustained by the company or its attachments and there were no losses of vehicles or equipment.

For the pursuit from Tabu-dong to Osan, of which the dash from Sangju to Poun was an important part, the 3d Battalion received the Distinguished Unit Citation.

A SHORT CUT TO THEORY OF LASHING

By MAJ RICHARD McCLURE, Infantry

In teaching "Computation of Aircraft Cargo Lashings," the object is to give the students a simple method by which they can compute the minimum number of lashings necessary to secure an item of cargo against expected thrusts. Many instructors have found that one of the fastest ways to lose a class is to speak in terms of G's, percentage of holding force, angle of tie, and lashing strength.

The problem, then, is to devise a short-cut method of computing these lashings so that students will not stumble over mathematics and technical terms.

In teaching theory of loading, it is common practice to divide moments of force by 10,000 to keep the numbers small. Why can't we work out a constant — "K" — for 1,000 pounds of cargo? Why can't we work tie-down systems and thrust factors into a small ready-reference chart?

The formula:

$$\frac{1{,}000 \times \text{G factor}}{\text{Tensile strength} \times \%\text{ effective holding force}} = \text{constant for 1,000 pounds}$$

gives "K" factors for the various tie-down systems and, depending on the percentage of effective holding force used, the restraint requirements for angles of tie. In most cases the angle of tie is 45° with the cargo compartment floor and 45° with the long axis of the cargo compartment. In assault-type aircraft, the restraint in a forward direction must be many times greater: angles of tie of 30° instead of 45° are used.

Here's how the short-cut method works:

Instead of using the actual weight of the cargo to be lashed, we use 1,000 pounds. By multiplying 1,000 pounds times the restraint factor, the product is the total pounds of thrust which must be lashed. The number of lashings required is found after the effective holding force of each lashing is determined by use of the sine law. We find that a lashing is 70.7% effective when one 45° angle is introduced. When another 45° angle is introduced, the net result is 70.7% of 70.7% or approximately 50%. Since we know the tensile strength of our material, the effective holding force can be determined by multiplying the tensile strength by the percentage of effective holding force. When this has been done, we divide the total pounds of thrust by the effec-

tive holding force. This gives us the number of lashings required for each 1,000 pounds of cargo and is "K," the constant. Constants for each of the common tie-down systems are determined in a similar manner and are placed in chart form under two headings: angles of tie and restraint factors. The chart shown in Figure 1 may be reproduced for instructional purposes or retained for future use in expediting the movement of your unit by air.

First, we divide the weight of the truck, 11,775 pounds, by 1,000 and get 11.775, which we raise for convenience to 12.

Next, we look up the constant for the forward and rearward restraint factors given above, opposite the 10,000 lb. C-2 tie-down system in Figure 1. For the forward restraint factor, 3.0, we get a constant of .6. The constant for the rearward restraint factor is .3. These are under the "45°-45° angle of tie" portion of the table, since the C-119B is not

LASHING CONSTANTS PER 1,000 POUNDS OF CARGO

	RESTRAINT FACTORS								
	45-45° ANGLE OF TIE							30-30° ANGLE OF TIE	
STRENGTH OF TIE-DOWN SYSTEM ↓	1.5	2.0	2.25	3.0	4.0	4.5	8.0	1.5	8.0
10,000 LB (C2 DEVICE-10,000 LB FITTING)	.3	.4	.5	.6	.8	.9	1.6	.2	1.1
7,000 LB (C2 DEVICE-7,000 LB FITTING)	.5	.6	.7	.9	1.2	1.2	2.3		
5,000 LB (B1 OR C2 DEVICE 5,000 LB FITTING)	.6	.8	.9	1.2	1.6	1.8	3.2	.4	2.2
2,000 LB (1/2" ROPE-5,000 LB FITTING)	1.5	2.0	2.3	3.0	4.0	4.5	8.0	1.0	5.4
1,250 LB (A1 DEVICE-1,250 LB FITTING)	2.4	3.2	3.6	4.8	6.4	7.2	12.8		
1,150 LB (DEVICE-1,150 LB FITTING)	2.7	3.5	4.0	5.3	7.0	7.9	14.0		

Figure 1

Here's an example of the short-cut method in action:

Suppose we wish to compute the number of 10,000 pound strength C-2 devices required to secure a 2½-ton GMC truck weighing 11,775 pounds, using 45°-45° angles of ties, in a C-119B aircraft having the following restraint factors: forward 3.0, rearward 1.5, sideward 1.5, vertical 2.25.

an assault-type cargo aircraft.

Now we multiply the weight by the forward constant:

$12 \times .6 = 7.2$ or 8, the next higher whole number.

Similarly, we multiply the weight by the rearward constant:

$12 \times .3 = 3.6$ or 4, the next higher whole number.

Adding the two we get 12 C-2 devices, the number of lashings needed to secure the truck in the

aircraft.

By using the short-cut method, anyone can compute the number of lashings required to secure cargo in almost any situation. The educational level of the individual, differences in tie-down devices, and variations in restraint factors present no problems that cannot be solved quickly and accurately by reading (and understanding) the short-cut chart.

INSTRUCTIONAL MATERIAL

As a service to its readers, the *Quarterly* regularly lists new instructional problems available through the Book Department, The Infantry School. All these problems contain lesson plans and narratives for the instructor. Additional items will be found on page 82.

Problem #2172, **Heavy Mortar Platoon and Company in Attack.**

A four hour problem on organization and tactical employment of the heavy mortar company in support of the infantry regiment in attack, with emphasis on reconnaissance, selection and occupation of positions, coordination and control of fires, displacement, and ammunition supply; practical exercise illustrating the principles of employment. Price, 30¢.

Problem #2255, **Offensive Combat in Mountains.**

A two hour problem to teach the influence of mountain terrain on offensive tactics for the infantry regiment and battalion. Price, 10¢.

Problem #2303, **Regiment in Meeting Engagement.**

Four hours of principles of offensive action applicable to meeting engagements; map exercise illustrating a regiment, motorized, with a mission which results in a meeting engagement with emphasis on organization of a motorized column, security measures against guerilla attacks, and the conduct of an attack initiated from a march column. Price, 15¢.

Problem #1813, **Gunnery Fundamentals, Tank Weapons.**

One hour on description and general characteristics of tank ammunition; fire commands. Price, 10¢.

Problem #1816, **Fire Control Instruments, Tank Weapons.**

One hour on fire control instruments; nomenclature and use. Price, 10¢.

Problem #1873, **Tank Gunnery.**

A four hour problem including range firing; service ammunition; fire adjustment; use of AP and HE ammunition; demonstration of other types of ammunition; range determination. Service ammunition firing by students at fixed targets. Price, 10¢.

Problem #2024-2025N, **Individual Day and Night Training and Patrolling.**

Eight hours on day training of the individual soldier; principles of patrolling; types of patrols, preparation of patrols, formations, selection of routes, and methods of movement; conduct of day patrol; differences between day and night patrolling; combat patrolling including raids, infiltration, and ambushes. TF 7-2055, "Combat Patrols." Price, 5¢.

The above items may be ordered from

The Book Department, The Infantry School, Fort Benning, Georgia

COURSES OF ACTION

By CAPT CONRAD B. PITCHER, Infantry

Almost every aspect of your daily life is affected in some way by the quality of your military knowledge and your ability to apply it. As you progress through your military career, your acquired professional knowledge and ability will influence rapidity of promotion and desirability of assignments, making the acquisition of military skills a matter of keen personal interest.

Realizing that not all officers can be assigned to army service schools, the instructors at The Infantry School have prepared extension courses which contain much of the same essential, practical information you would receive by attending the resident course of instruction.

Which of the many extension courses offered can best equip you for the duties of the future? You know your own capabilities and needs better than anyone else, but to help you select the extension course subjects which are of special value to you, The Infantry School has prepared Table I (page 103) listing the numbers of subcourses recommended for specialized study, DESIGNED PARTICULARLY FOR OFFICERS (AND KEY ENLISTED MEN) ON ACTIVE DUTY. The subcourse numbers considered a "must" for each position in the Infantry regiment are in bold-face type. Those which provide allied background information are considered "desirable," and are in regular type. Table II on page 106 lists the *available* subcourses by number and title.

In special cases, Reserve and National Guard officers not on extended active duty may also use this listing in selecting subcourses for study. One provision in such cases is that their present or prospective duties urgently require special training. The Unit Instructor and The Infantry School will determine whether such officers should be enrolled.

Officers of reserve components (not on active duty) are reminded that this listing is NOT a substitute for the numbered series established for the purpose of preparing them educationally for promotion.

In arriving at a final, recommended list of subcourses, certain assumptions were made: first, that an officer would have general knowledge and experience appropriate to his grade; second, that the courses recommended should provide information of value for the officer preparing for a particular position; third, that the courses should be held to a number which could be completed in a reasonable period of time. Any officer can complete his "must" courses in a year by working at an average rate of one lesson per week.

If you have not had the opportunity to acquaint yourself with

certain basic and essential subjects, you will be wise to review them before studying those subjects recommended for your position in the Infantry regiment.

Since the extension courses are prepared by the instructors who teach the subjects to the basic and advanced classes at The Infantry School, the contents of the extension courses and their texts are similar to those of the regular resident courses. This keeps you abreast of the latest thought and doctrine on Infantry problems.

This means of self-improvement and of keeping up with changing conditions is especially important to you during this time of emergency and expansion. Moreover, there is always the possibility that you may not get an opportunity to attend resident courses.

For those of you who will attend resident instruction at The Infantry School these extension courses will give you a better basic knowledge of the subjects and should result in your having a higher final standing in your class.

General details on extension courses are available in AR 350-300, SR 350-300-1, and in DA Pamphlet 20-100. For further details write: **Commandant, The Infantry School, Fort Benning, Georgia, Attention: Director of Extension Courses.**

RECOMMENDED SUBCOURSES

TABLE I

RIFLE COMPANY

Company Commander (1542)
20-2 20-3 20-13 20-17 20-18 30-1 30-5 40-7 40-14 40-15 40-19 40-22 40-24
20-4 20-12 30-8 30-9 30-10 30-12 30-13 40-11 40-12 40-13 40-20 40-21

Executive Officer (1542)
20-3 20-7 20-10 20-12 20-13 20-18 30-1 30-5 30-10 30-12 30-18
20-2 20-4 20-17 30-3 30-9 30-13 40-22

Weapons Platoon Leader (1542)
20-2 20-4 20-6 20-9 20-12 20-13 20-14 20-15 30-5 30-9 30-10 30-12
20-3 20-18 30-3 40-22

Rifle Platoon Leader (1542)
20-2 20-4 20-6 20-9 20-12 20-13 20-14 20-15 20-17 30-5 30-9
20-3 20-18 30-3 30-13 40-22

HEAVY WEAPONS COMPANY

Company Commander (1542)
20-2 20-3 20-13 20-18 30-1 30-5 40-7 40-14 40-15 40-19 40-22 40-24
20-4 20-12 20-14 20-16 30-8 30-9 30-11 30-14 40-11 40-12 40-13 40-20 40-21

Executive (Recon) Officer (1542)
20-3 20-7 20-10 20-12 20-13 20-18 30-1 30-5 30-11 30-14 30-18
20-2 20-4 20-14 20-16 30-3 30-9 30-10 30-12 30-13 40-22

Platoon Leader (1542)
20-2 20-4 20-6 20-9 20-12 20-13 20-14 20-16 30-5 30-9 30-11 30-14
20-3 20-17 20-18 30-3 30-10 30-12 30-13 40-22

BATTALION

Battalion Commander (1542)
40-7 40-8 40-14 40-15 40-16 40-17 40-24 50-2 50-3 50-4 50-6
20-3 40-2 40-3 40-4 40-10 40-11 40-12 40-13 40-19 40-20 50-5

Battalion Executive Officer (1542)
40-7 40-8 40-14 40-15 40-16 40-17 40-19 40-24 50-2 50-3 50-4 50-6
20-3 30-1 40-2 40-3 40-4 40-10 40-11 40-12 40-13 50-5

Battalion S-1 (2110)
20-3 30-1 30-7 30-19 30-20 40-7 40-8 40-14 40-15 40-19 40-24
40-2 40-3 40-5 40-16

Battalion S-2 (9301)
20-8 20-9 30-3 30-9 40-6 40-8 40-14 40-15 40-24
40-2 40-3 40-9 40-22

Battalion S-3 (2162)
30-7 30-8 40-7 40-8 40-16 40-21 40-22 40-24 50-2 50-3 50-4 50-6
20-2 20-3 20-4 20-12 30-9 40-4 40-9 40-10 40-11 40-12 40-13 40-20 50-5

Assistant Battalion S-3 (2162)
20-2 20-15 20-16 20-17 30-8 30-10 30-11 30-12 30-14 40-20 40-21 40-22
20-3 20-4 20-5 20-6 20-12 20-14 30-3 30-9 30-13 40-4

Battalion S-4 (4010)
20-7 20-10 20-18 30-8 30-16 40-7 40-8 40-17 40-24
20-3 40-2 40-3 40-14 40-15

Headquarters Company Commander (1542)
20-2 20-3 20-18 30-1 40-7 40-19 40-22 40-24
20-12 30-5 30-8 40-14 40-15 40-20 40-21

Battalion Motor Officer (0600)
20-2 20-10 20-12 30-8 30-16
20-3 20-13 30-10 30-11 30-12 30-14

P & A Platoon Leader (1504)
20-2 20-6 20-12 20-13 20-18 30-5 **30-8**
20-3 30-3 30-10 30-11 30-12 30-14 40-22

Communications Officer (0200)
20-2 20-12 20-13 30-7 40-18
20-3 30-3 30-5 30-10 30-11 30-12 30-14 40-16

REGIMENTAL TANK COMPANY

Company Commander (1203)
20-2 20-3 20-13 20-17 20-18 30-1 40-7 40-12 40-14 40-15 40-19 40-22 40-24
20-5 20-14 30-5 30-8 30-9 30-11 30-14 30-8 40-16 40-17 40-21

Executive Officer (1203)
20-3 20-5 20-7 20-10 20-13 20-18 30-1 30-3 30-5 30-11 30-14 30-18
20-2 20-14 20-17 40-22

Platoon Leader (1203)
20-2 20-5 20-6 20-9 20-13 20-14 20-17 30-3 30-5 30-9 30-11 30-14
20-3 20-18 40-22

HEAVY MORTAR COMPANY

Company Commander (1542)
20-2 20-3 20-13 20-18 30-1 40-7 40-9 40-22 40-24 40-3 40-4
20-14 20-16 30-5 30-8 30-9 30-11 30-14 40-8 40-9 40-11 40-12 40-13 40-16 40-17 40-21

Recon Officer (1542)
20-3 20-7 20-10 20-13 20-18 30-1 30-3 30-5 30-11 30-14 30-18
20-2 20-14 20-16 30-9 40-9 40-22

Opns and Fire Direction Officer (1188)
20-2 20-13 20-16 30-3 30-5 30-11 30-14 40-9 40-17
20-3 20-14 20-18 40-22

Platoon Leader (1542)
20-2 20-6 20-13 20-14 20-16 30-3 30-5 30-11 30-14
20-3 20-18 40-9 40-22

REGIMENT

Regimental Commander (1542)
60-2 60-3 60-4 60-5 60-7 60-8 60-9 60-10 60-11 60-12 60-13
20-3 40-2 40-3 40-10 40-11 40-12 40-13 40-16 40-19 40-24 50-7 50-8

Regimental Executive Officer (1542)
40-8 60-2 60-3 60-4 60-5 60-7 60-8 60-9 60-11 60-12 60-13
20-3 40-2 40-3 40-10 40-11 40-12 40-13 40-16 40-19 40-24 50-7 50-8

Regimental S-1 (2110)
20-3 30-1 30-19 30-20 40-7 40-8 40-16 40-19 50-7 50-8 50-10
40-2 40-3 40-5

Regimental S-2 (9301)
20-8 20-9 30-9 40-6 40-8 40-24 50-7 50-8 50-11 60-2 60-3 60-4 60-5
20-3 40-2 40-3 40-4 40-9 40-16 40-22

Regimental S-3 (2162)
40-7 40-8 40-16 40-21 40-22 40-24 50-7 50-8 50-12 60-2 60-3 60-4 60-5
20-3 30-9 40-2 40-3 40-4 40-10 40-11 40-12 40-13 40-20

Assistant Regimental S-3 (2162)
30-18 40-20 40-21 40-22 40-24
20-2 20-3 40-4 40-7 40-8 40-9 40-10 40-11 40-12 40-13 40-14 40-15 40-16

Regimental S-4 (4010)
20-18 30-8 30-16 40-7 40-8 40-17 40-24 50-7 50-8 50-9 50-13
20-3 20-7 20-10 40-2 40-3 40-5 50-2 50-3 50-4

Regimental Commo Officer (0200)
20-13 30-7 40-7 40-16 40-18
20-3 40-8 40-14 40-15 40-17 40-22

Liaison Officer (1542)
None required
20-3 40-8 50-7 50-8 60-2 60-3 60-4 60-5

HQ AND HQ COMPANY (Regt)

Company Commander (2900)
20-2 20-3 20-18 30-1 40-7 40-16 40-19 40-22 40-24
20-8 20-12 30-3 30-5 30-8 40-5 40-8 40-20 40-21

Executive and Gas Officer (2900)
20-3 20-7 20-10 20-18 30-1 30-3 30-5 30-18
20-2 20-12 40-22

Counter Fire Platoon Leader (1542)
20-2 20-6 20-12 20-13 20-16 20-18 30-3 30-5 40-9
20-3

Security Platoon Leader (1542)
20-2 20-4 20-6 20-12 20-13 20-14 20-15 30-3 30-5
20-3 20-18 30-9 30-11 40-22

I & R Platoon Leader (9312)
20-2 20-8 20-9 20-12 20-13 20-17 30-3 30-5 30-9
20-3 20-14 20-18 30-10 30-11 30-12 30-14 40-22

AT Mine Platoon Leader (1504)
20-2 20-6 20-12 20-13 20-18 30-3 30-5 30-9
20-3 20-14 20-15 20-16 30-10 30-11 30-12 30-14 40-22

Commo Platoon Leader (0200)
20-2 20-12 20-13 20-18 30-3 30-5 30-7 40-16 40-18
20-3 20-14 20-15 20-16 30-10 30-11 30-12 30-14 40-22

SERVICE COMPANY

Service Company Commander (2910)
20-3 20-7 20-10 20-18 30-1 30-8 30-16 40-8 40-17 40-19 40-24
20-2 20-12 30-5 30-9 40-14 40-15 40-16 40-21

Graves Registration Officer (2430)
20-2 20-18 30-16 40-17
20-3

Regimental Motor Officer (0600)
20-2 20-10
20-3 40-7 40-8

AVAILABLE SUBCOURSES

TABLE II

20-2 Methods of Instruction
20-3 Military Law — Courts-Martial
20-4 Crew-Served Infantry Weapons Not Self-Propelled
20-5 Tanks in the Infantry Regiment
20-6 Hasty Field Fortifications and Obstacles
20-7 Mess Management
20-8 Intelligence and Reconnaissance Platoon, Infantry Regiment
20-9 Combat Intelligence II
20-10 Motor Vehicle Operation and Maintenance
20-12 Troop Movement and Bivouac I
20-13 Communication in the Infantry Company
20-14 Platoons of the Infantry Regiment in Defense
20-15 Rifle and Weapons Platoons in Attack
20-16 Platoons of the Heavy Weapons and Heavy Mortar Companies in the Attack
20-17 The Small Unit Infantry-Tank Team in the Attack
20-18 Combat Supply and Evacuation of the Infantry Company
30-1 Administration II
30-3 Terrain Evaluation I
30-5 Estimate of the Situation and Combat Orders II
30-7 Communication in the Infantry Battalion
30-8 Troop Movement and Bivouac II
30-9 Reconnaissance and Security
30-10 Rifle Company in Defense
30-11 Heavy Weapons, Tank, and Heavy Mortar Companies in Defense
30-12 Rifle Company in Attack
30-13 Combat of an Infantry Rifle Company Under Special Terrain Conditions
30-14 Heavy Weapons, Tank and Heavy Mortar Companies in the Attack
30-15 Movement by Air
30-16 Combat Supply and Evacuation of the Infantry Battalion
30-17 Combat Supply, Evacuation, and Maintenance of the Armored Infantry Battalion
30-18 Troop Information and Education Program I
30-19 Special Service Officer
30-20 Duties of the Exchange Officer
30-21 Map and Aerial Photograph Reading II
30-22 Leadership I
40-1 Map and Aerial Photograph Reading III
40-2 Rules of Land Warfare
40-3 Military Government
40-4 Employment of Army Aviation
40-5 Traffic Control, Reconnaissance and Planning
40-6 Combat Intelligence III
40-7 Troop Movement and Bivouac III
40-8 Staff Functions and Procedures
40-9 Counterfire Organizations and Techniques
40-10 Joint Air-Ground Operations

40-11 Field Artillery in Support of Infantry
40-12 Employment of the Infantry Division Tank Battalion
40-13 Tactics and Techniques of Engineers
40-14 Infantry Battalion in Defense
40-15 Infantry Battalion in Attack
40-16 Communication in an Infantry Regiment
40-17 Combat Supply and Evacuation of the Infantry Regiment
40-18 Communication Responsibilities of Commanders and Staff Officers
40-19 Military Boards and Investigations
40-20 Troop Information and Education Program II
40-21 Training Management
40-22 Preparation of a Field Exercise
40-23 Airborne Operations I
40-24 Terrain Evaluation II
40-25 Leadership II
50-2 Infantry Battalion and Regiment in Defensive Combat
50-3 Reinforced Infantry Battalion in Attack I
50-4 Reinforced Infantry Battalion in Attack II
50-5 Reinforced Infantry Battalion in Jungle and Mountain Operations
50-6 Infantry Battalion in Retrograde Movements
50-7 Command and Staff Functions — Division
50-8 Tactical Principles and Control Methods — Division
50-9 Special Staff Sections — Division
50-10 Personnel Section — Division
50-11 Intelligence Section — Division
50-12 Operations Section — Division
50-13 Logistics Section — Division
50-14 Staff Cooperation and Coordination — Division
60-2 Development and Security of an Infantry Regiment in Defensive Combat
60-3 Infantry Regiment in Defense
60-4 Infantry Regiment in Attack
60-5 Reinforced Infantry Regiment in Offensive Combat
60-6 Airborne Operations II
60-7 Principles of Military Leadership
60-8 Tactical Principles and Decisions I
60-9 Tactical Principles and Decisions II
60-10 Tactical Principles and Decisions III
60-11 Tactical Principles and Decisions IV
60-12 Tactical Principles and Decisions V
60-13 Troop Leading — Command, Staff, and Logistics
60-14 The Army Information Program — Public Information and Troop Information and Education
60-15 The Army Area

LETTERS

Your check and the April QUARTERLY *arrived today . . . . It was pleasing to note that the Third Division was well-represented in the "Meet the Authors" column, proving that we thought as well as fought in Korea.*

The check was a surprise, as I did not realize the QUARTERLY *paid for its articles. It gives a soldier a chance to get even with the Income Tax people.*

It seems to me that the action at the small-unit level is a study we could dig much deeper into, for here the fire-fight that wins the battle takes place. In the next war I will record further observations — and this time, keep my long legs out of the way.

William Strobridge
1st Lt., Infantry
Murphy Army Hospital
Waltham, Mass.

Strobridge is the author of "Squad Reconnaissance Patrol, Korea" in the April QUARTERLY. He is recovering at Murphy Army Hospital from wounds received some months ago in Korea.

Actually, the QUARTERLY does pay authors — how much? Write us a good article and find out!

But we're sorry to say that writing for the QUARTERLY doesn't give you a chance to get even with the Income Tax people. It's still income and must be reported.

There are a few things on my mind that need unloading. And I DON'T *think I'm alone in my sentiments. For instance. . . .*

I've never seen a non-com with a fine mustache who didn't strike me as being more interested in himself than his men . . . . and did you ever see a soldier with highly-polished boots who didn't immediately strike you as a man you'd like to have in your outfit?

One of the toughest things you can try is to determine who in your outfit will be the man who will shine in combat. Sometimes the one who will talk a good fight turns out to be a "foulball" and the guy you've been trying to get rid of all along becomes a holy terror . . . .

One sure way to wreck a company's morale is to steal stripes from it. I remember when one of the men who played baseball for my old division was assigned on paper to my company as a platoon sergeant. I never saw the man, yet I couldn't get the proper rank for my real platoon sergeant because the TO was filled.

Did you ever see a good company commander who didn't know the first name and a little of the background of every man in his outfit?

Somebody had better start realizing that NCO means non-commissioned OFFICER, and keep that in mind in selecting and assigning responsibilities to our stripes. Too

many of our non-coms couldn't lead a squad to the PX.

Think I'm all wet? It's still a free country: I'm entitled to my opinions, you're entitled to yours. But don't you think I've got something here?

Captain, Infantry

Enclosed is a money order for the two and a half I owe you and a subscription for the current year . . . .

I have really gotten a lot of benefit from the QUARTERLY *and I want to be kept on your list of permanent subscribers.*

Here in Korea the war has been stalemated for the winter and early spring. Patrols are sent out at NIGHT, *materially reducing the number of casualties. This, of course, brings the specter of ambush into play. I've had two patrols run into ambushes on the way back.*

One of the patrols was well dispersed with adequate security. They received five casualties. The other patrol bunched up, feeling secure in that they were only 1000 yards from their position when they were hit from the flanks and rear — close-in. The Chinese were set up within three or four yards of the trail we used as a patrol route.

During this action the alert radio man directed HMG, mortar, 57-mm recoilless rifle and artillery fire to within a few yards of the patrol's position. Eleven men were wounded in this action, most of them by Chinese (Russian) hand grenades.

We have killed a number of Chinese who seem as UNeager *to die as anyone else.*

James W. Wilson
1st Lt., Inf
APO, San Francisco, Calif.

If there is one sound the soldier knows, its the bugle call for chow. And in only slightly less degree does he know and understand such calls as assembly, call to arms, recall. Then why don't we use bugles more in combat? During the Great Withdrawal in December 1950, our company, as were most all others, was put in temporary blocking positions, with little time to lay telephone wire to platoons and outposts, and with greatly increased frontages. When the order came to pull out, especially at night, it was hard to get the word to every man quickly and pull out at the same time. On new terrain occupied at night, sometimes some men did not even get the word. But a very simple organizational tool was used with unqualified success: the U. S. Army Bugle. When the company had been prebriefed, and Assembly blew, clear, unmistakable, GI, and from the direction of the CP, the whole company moved, together and fast. When the enemy was near it was combined with pyrotechnics to make a secure signal: the bugle call alerted the men, and the star cluster confirmed it. And of considerable morale value was the fact that our using the bugle counteracted the fear and loneliness from the eerie night bugling by the Chinese. Trumpets and bugles are as old as armies. They had a place in battle once, and I think they have again.

Lt. Savage
Fort Benning, Ga.

Meet the Authors

Major John R. Flynn graduated from the Military Academy in 1944 and served with the 66th Division and occupation forces in Europe. In 1950 he joined the 1st Cavalry Division in Korea where he was a company commander and a battalion and regimental S3 in the 7th Cavalry. He is presently instructing in the Tactical Department of The Infantry School.

* * * * * *

Captain Conrad B. Pitcher, author of "Courses of Action," was graduated from Officer Candidate School in September 1942. During World War II he was in combat for a total of 22 months with the 35th Division and later, in the Aleutians, with the 201st Infantry. He was integrated into the Regular Army in 1946 and is currently assigned to the Army Extension Course Department of The Infantry School.

* * * * * *

Part II of "Defense of Rear Areas" is the work of Lieutenant Colonel Harold B. Mangold of The Infantry School's Tactical Department. Colonel Mangold entered the Service in January 1941 and served with the 38th Division throughout the Pacific campaigns of World War II. Prior to entering his present assignment at Fort Benning, Colonel Mangold attended the Command and General Staff College.

* * * * * *

Lieutenant G. W. Hartnell graduated from the United States Military Academy in 1948 and attended the Basic Course at Fort Benning prior to joining the 1st Cavalry Division in Japan. During the battles to hold the Pusan Perimeter in September 1950, he was wounded and returned to the United States. After his recovery he was assigned to the Weapons Department of The Infantry School and later, the Atomic Warfare Board. He attended the Sandia Characteristics and Effects of Atomic Weapons Course in 1951.

* * * * * *

Major Raymond H. Hitchcock, who states "The Case for Standardization" in our discussion of mountain troops, is a member of the Tactical Department of The Infantry School. His service during and after World War II is remarkable in that he served with one unit — the 2nd Division — from the time he entered the commissioned service as a platoon leader in 1941 until 1947 when he left the division as a regimental S3. As far as we know, this

is something of a record. During the winter warfare training and exercises of 1946-47 in Colorado, Major Hitchcock had an excellent opportunity to observe what can be done with a standard T/O&E regimental combat team. Many of the observations he made then form the basis for his belief in standardization.

* * * * * * *

"Small Arms Fire Course," the second article in our Battle Indoctrination Series, is the work of Captain Charles A. Nicholson. During World War II, Captain Nicholson served with the 399th Regiment, 100th Division. He was recalled to active duty in 1951 and is now assigned to the Tactical Department, The Infantry School.

* * * * * * *

Lieutenant Orville C. Folkerts is the author-inventor of the "Range-Deflection Scale." After graduating from the Tank Destroyer Officer Candidate School in 1943, he joined the 81st Division and took part in the Philippine campaigns and the occupation of Japan. He was recalled to active duty in 1951 and is now a weapons instructor at The Infantry School.

* * * * * * *

The pen of Lieutenant Colonel Edward M. Flanagan is well-known to QUARTERLY readers. His previous articles have created wide discussion as will "Play the Gimmicks" in this issue. Colonel Flanagan is an instructor at The Artillery School.

* * * * * * *

Captain Joseph D. Smith graduated from OCS in 1942 and reported for duty with the 102d Division. He went to the ETO with his unit and remained with it until 1945. In 1950 he accompanied the 3d Division to Korea where he served as a communications officer and aerial observer. He returned to the United States last November and is now assigned to The Infantry School.

* * * * * * *

Captain Frank P. Jones, author of "Question for Commanders," received his commission via OCS in 1942. Shortly thereafter, he became a platoon leader in the 15th Infantry, 3d Division, and served with it in North Africa, Sicily, Italy, and Camp Hood, Texas, where he finished his war time tour as a company commander. He was recalled in June 1951 and is presently an instructor at The Infantry School.

* * * * * * *

"Of Hills and Hell Raisers" should provoke considerable interest among those expecting assignment to the FEC. Captain Curtis L. Anders, the author, is a former member of the 7th Division, having joined it in Japan and serving there and in Korea as a platoon leader, company commander and a battalion S2. Prior to this assignment, he graduated from the Military Academy in 1949, the Ground General School at Ft. Riley and The Infantry School.

* * * * * * *

"Stadia Sight" is the second contribution by Major Lee W. Fritter to be published in the QUARTERLY. Major Fritter served with the 101st Airborne Division during World War II and is presently a member of The Infantry School's Weapons Department.

* * * * * * *

Captains Albert J. Crupi and George D. Crosby combine their talents to write "Battle Sight Zero."

Captain Crupi graduated from OCS in 1943 and served overseas with the 87th Division. Recalled to active duty in 1951, he is now an instructor in the Weapons Department at The Infantry School. Captain Crosby was a member of the 355th Infantry in the ETO during World War II. He, too, is an instructor in the Weapons Department.

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A new idea on Airborne activities is related in "Short Cut Lashing Theory" by Major Richard McClure. During World War II, Major McClure served with the 24th Division in the Southwest Pacific. He is now en route to Europe after two years as an instructor at The Infantry School's Airborne Department. The chart shown in his article was devised by Lt Col Roy I. Brooks, formerly of The Infantry School.

* * * * * *

Major Charles B. Hazelrigg, an Armor instructor at The Infantry School, has a wealth of experience on which to base his article "Armor in Korea." During World War II, he served with the 1st Armored Division in the Mediterranean Theater of Operations. He went to Korea as a tank company commander in the 23rd Infantry, 2nd Division, and later served with the 72nd Tank Battalion.

* * * * * *

"Report on Korea" under COMBAT TIPS is the work of Colonel William J. McCaffrey. Colonel McCaffrey gained mountain fighting experience in Italy with the 92nd Division in World War II. In Korea he served on X Corps' Staff and commanded the 31st Infantry, 7th Division. He is presently assigned to the Army War College.

* * * * * *

Major Frederick H. Black, Jr., and WOJG Coats Brown present their fourth article on working models in this issue. As in previous articles, Major Black provides the text and WOJG Brown does the measurements and drafting work. Major Black recently graduated from the Advanced Course at Fort Benning and was assigned to the Caribbean Defense Command with station in Puerto Rico. WOJG Brown, a draftsman for The Infantry School, was on the All-Army Rifle Team this year placing high in competition against hundreds of the country's finest marksmen.